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TO OUR CONTRIBUTORS

JIE invites articles/papers on the impact of educational research on classroom practices, policy decisions. Specific examples where this impact is apparent may be given.

GENERAL EDITOR

Sri Aurobindo's Philosophy of Spiritual Transformation

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THROUGHOUT civilization humanity has universally embraced the notion that somewhere deep within the chasm of human nature lies the potential for human divinity. The expression, "I too am of divine descent", is inscribed not only on the Orphic plates in ancient Greece, but has been echoed by virtually every culture since the beginning of time.[1]

The potentiality for the divine or the debase is much like a human morality play in which one is never quite sure which side is actually winning. In the light of R.M. Bucke's 'marks of the cosmic sense' in his *Cosmic Consciousness* and Nietzsche's 'will to power' aimed at supermanhood one can justifiably ask, 'Which way to human perfection?'

One person who emerges within this philosophical dialogue is Aurobindo Ghose and his philosophy of spiritual transformation. What is unique about Aurobindo's metaphysics is his attempt to synthesize both Eastern and Western views in articulating a philosophy of integral non-dualism.[2]

Integral non-dualism asserts that it is possible for one to achieve a balanced harmony between the material and the spiritual world. Aurobindo's philosophy is based on a hierarchical and evolutionary premise that all life and matter constitutes material energy and form. Aurobindo believes that the destiny of humanity does not lie in its self-absorption into the present but in an ongoing spiritual and evolutionary development aimed at human perfection. Central to his philosophy of spiritual development is the Vedantic premise that 'all is Brahman' and 'Brahman is all'. Brahman, in the Vedic religion, is conceived of in terms of God, the Divine, Absolute, Ultimate Reality, or Supreme Existence. Since matter is an extension of Brahman, it therefore follows that all matter contains a potentiality of the Divine. Thus, Aurobindo writes that . . . all things here are expression, form, energy action of the Spirit ; matter itself is but form of spirit, life but power of being of the spirit, mind but working of consciousness of the spirit. All nature is a display and a play of God, power and action and self-creation of the one spiritual being.[3]

The Greek dictum "know thyself" represents the fundamental notion that in order to achieve a transformation of any sort there must first be the realization that there is more to oneself than the materialist's identification with flesh and bone. If "the world is charged with the grandeur of God", as Gerard Manley Hopkins has so poetically written, then surely there is more to life than what one reads in the Sunday paper.

Aurobindo argues that this urge towards spirituality and human perfection exists potentially within all persons. The fundamental urge to grow in knowledge, beauty, love, and wisdom is that which characterizes his conception of the spiritual person. In reality, it is obvious that the great majority of persons have not been touched by an overwhelming urge toward spirituality.[4] Indeed, putting physiological and safety needs aside, there are those who would argue about what constitutes the nebulous spiritual life. In Evelyn Underhill's classic work, *Mysticism*, we have examples of individuals who chose lives of poverty and physical mortification in order to achieve what they believed to be self-purification and the life of the spiritual.[5]

Rather than thinking in either-or's, Aurobindo eschews the view that the material world is characterized by error and illusion. Aurobindo saw no contradiction in embracing the material world and the human flesh as necessary instruments for the divine workings of the spirit. The purpose for human existence is not to escape the world but to transform it. According to Aurobindo, this transformation can initially occur when one recognizes the important distinction between knowledge and ignorance.

Knowledge and Ignorance

In *The Life Divine* Aurobindo defines knowledge as that which goes 'beyond mind and intellectual reasoning'.[6] Drawing from the hymns in the *Rig Veda*, Aurobindo asserts that knowledge is characterized by a consciousness of unity in diversity. It is a seizing of the oneness and significance of all things and an interior grasping of the divinity of all existence.

If knowledge is characterized by unity, ignorance is straddled with disunity. Aurobindo often links ignorance to the Cartesian mind-body dualism of always thinking in fractions rather than wholes, in minutia rather than gestalts. The mind, being entrapped by its own ego limitations, is incapable of discerning true knowledge. Like the poor souls confined in the Platonic cave, one can never grasp episteme until one shakes loose the shackles of ignorance and steps out into the 'intelligible realm'.[7] For Aurobindo, the 'intelligible realm' consists of the realization that knowledge in its highest spiritual sense means 'knowledge of the one' and *avidya* or ignorance consists of consciouness of the many.

If all things come from Brahman, how is it that ignorance exists? Surely it is contradictory for the perfect to give rise to the imperfect. Aurobindo explains that ignorance exists as a result of a 'distorting' consciousness. Ethnocentrism characterizes the mind and separates it from its spiritual kinship with all peoples. Indeed, the attitude that Aurobindo engenders is reminiscent of the Native American's philosophy that 'with all beings and all things we shall be as relatives' as it is with the Pythagorean notion regarding the 'kinship of all beings'. Somehow in the course of human evolution we have inflicted ourselves with the pathological condition of spiritual amnesia. The prognosis for such a malady, Aurobindo argues, is the eventual realization that 'wisdom comes', and 'vision grows within'.[8]

The process by which a transformation of the self is achieved involves a long and arduous journey. Certainly it is not an accomplishment that is attained overnight anymore than one can ingest a pill in the hope of achieving instant enlightenment. The degree of success or failure rests solely upon the sincerity, tenacity, receptivity, and aspiration of each individual. Aurobindo does, however, provide some guidelines for the neophyte who wishes to engage in the creative evolution of the human spirit.

Integral Yoga

Yoga is derived from the Sanskrit root verb *yuj* meaning to bind, join, unite, and control. In *Integral Yoga The Concept of Harmonious and Creative Living*, Haridas Chaudhuri explains that yoga literally means union and control. It signifies the union of man with God, of the individual with the universal reality, of each with the All of existence. It implies union of the mind with the inmost centre of one's being, the self or atman—union of the conscious mind with the deeper levels of the unconscious—resulting in the integration of personality. But yoga also means control, that is to say appropriate self-discipline. The word yoga thus implies both the goal of life and the path leading to that goal...[9]

Chaudhuri further points out that yoga affirms the creative individuality of spiritual self-expression. There is no standardized path for all to follow since in the words of Aurobindo, 'all life is yoga'.[10] Unlike the majority of religions who posit the singular way, yoga affirms the relativity and significance of all creeds. The importance of yoga is not in its subscription to ideological belief but in one's experience and inner growth toward greater consciousness. Experience rather than faith, insight rather than belief dictate the path toward spiritual evolution. Thus, given the diverse manifestations of the Divine, one is free to choose the manner in which one seeks to aspire toward a commitment to higher spiritual values. Because no one spiritual path represents a complete embodiment of truth, Aurobindo posits an integral system of yoga by affirming that truth can be experienced in a variety of ways. Through a synthetic integration of Haṭha Yoga, Rāja Yoga, Kundalinī Yoga, Jñāna Yoga, Bhakti Yoga, and Karma Yoga, Aurobindo has postulated a new interpretation of the traditional yogic systems of India.

It is well to remember that integral yoga affirms a richer and fuller dimension to one's experiences because of its attempt to encompass all creeds and be enslaved by none. Integral yoga asserts that one must not merely work toward the emancipation of self but one must also seek to liberate others from their bondage of human ignorance. This emancipation can never occur through coercion or uniformity but must come through the existential manner of free choice and assuming responsibility for one's acts. In the words of Radhakrishnan : "Man grows by countless lives into his divine self-existence. Every life, every act, is a step which we may take backward or forward. By one's thought, will and action one determines what one is yet to be".[11]

Through experience, analysis, and insight one is capable of verifying the efficacy of yogic practice in the experimental test tube called life.

Haṭha Yoga

In his *Philosophical Investigations*, Wittgenstein states that 'the human body is the best picture of the human soul'.[12] Whether he realized it or not, Wittgenstein was uttering an ancient Vedic truth. The physical body, according to ancient teachings, represents an opportunity for the soul to work out its spiritual development. As is the case with chemical affinities, so too is each soul attracted to a particular body for the purpose of meeting its earthly challenges. Because each soul has different needs, we are warned that when it comes to spiritual matters we must always refrain from passing judgment. Suffice it to say that lessons not learned in this life mandate that we repeat the class.[13]

In the ideal sense, Haṭha Yoga focuses on the physical body as a necessary channel through which God's work can be accomplished. Through various bodily postures, breathing exercises, and an emphasis on diet and health, it is possible to control, strengthen and vitalize the body so that it can perform feats of great physical strength. It is believed that one who has mastered one's bodily functions will enjoy the fruits of youth, health, and longevity.

The primary limitation of Haṭha Yoga lies in the possible glorification of the human body as an end rather than as a means to an end. Frequent visitations to a health gym to engage in aerobics and other forms of physical exercise do not represent the culmination of one's goal in the life of the spiritual. To deify the body for its own sake without any regard to a higher axiology is to become like Narcissus, a beautiful lad in Greek mythology who, bending over to drink from a pool of clear water, fell in love with his own reflect on.

Rāja Yoga

While Haṭha Yoga seeks to transform the physical body so that it can serve as an instrument of God, Rāja Yoga focuses on the control and discipline of the human mind.

In the Buddhist *Dhammapada* we are told that 'all that we are is the result of our thought'.[14] Implicit in this view is the claim that all thoughts contain power and energy. Ancients believe that if a thought is intense enough, it has the capacity to materialize into concrete form. This idea has been expressed in ancient Eastern texts thousands of years old.[15] In the Western culture we are reminded about the importance of positive thinking in Philippians 4-8 ; "Whatsoever things are true, whatsoever things are honest, whatsoever things are just, whatsoever things are pure, whatsoever things are lovely, whatsoever things are of good report . . . think on these things."

In fact, even the medical profession, in spite of its addiction to the mind-body mentality, is beginning to recognize the influence that the mind and the emotions have on the manifestation of disease.[16]

If thoughts have power, as researchers say they do, then it is imperative that we learn to become clearer vehicles through which luminous thoughts may arise. William Blake wrote of the need to 'cleanse the doors of perception' in order for us to see things as they really are—infinite.

Thus the aim of Rāja Yoga is to quiet and purify the mind so that we may ultimately attain mental calmness, tranquillity, and peace. For the majority of persons this is a difficult task, for mental silence requires concentration, patience, perseverance, and self-discipline. Through a variety of meditation techniques, Aurobindo claims that the mind can be stretched to perform 'great feats of intellectual strength'. It is not enough to be aware of William James's admonition that we use less than ten per cent of our mental apparatus. Rather, it behooves us to undertake new experiences that will allow us to tap the other ninety per cent of our dormant cerebral mass. Aurobindo writes of the value of inner silence in the following passage : When one will have learnt to silence the mind at will and concentrate it in the receptive silence, then there will be no problem that one cannot solve, no mental difficulty to which a solution will not be found. Thought, while in agitation, becomes confused and impotent; in an attentive tranquillity, the light can manifest itself and open new horizons to man's capacity.[17]

Kundalinī Yoga

Kundalinī, writes Aurobindo in *The Synthesis of Yoga*, represents the 'coiled and sleeping serpent of Energy within'.[18] Sometimes referred to as Tāntric Yoga, this pocket of energy as it were, is located at the base of one's spine. Proof or non-proof of the power of Kundalinī is considered to be irrevelant since grounds for its existence are based on observation and personal experience.

The underlying premise that our bodies contain tremendous energy is well documented in physics. Given the scientific fact that all matter is comprised of atoms and our bodies consist of matter, it follows that the possibility for spontaneous human combustion is an ontological reality.

Through a variety of breathing techniques and meditations, it is possible for one to learn to tap this inner source of power and unleash it for constructive use.

Prior to the awakening of this centre, one is involved in the ethical and spiritual purification of self. Purity of the mind and the heart and adherence to a universalized ethical code of behaviour are the fundamental prerequisites for the spiritual aspirant.

"When the Kundalinī is dynamized", Haridas Chaudhuri writes, "the individual experiences a tremendous upsurge of energy from within. He feels it as the power of God working within him. He feels that he is being guided from within, with infinite patience and love. . . . Centres of extra-sensory perception are stimulated. The search for the ultimate is intensified. Meditation becomes in a sense effortless and spontaneous. A process of deepening self-awareness and joyful self-expansion sets in. Unconscious motivations are gradually brought to light, and a genuine spirit of dedication to the Divine begins to permeate the whole being".[19]

Given the diversity of psychological types and spiritual readiness, personal experiences at this level may vary from intense rapture to a 'sense of the presence'. The effectiveness of Kundalinī depends on the mental, emotional, and physical stability of the seeker. Kundalinī Yoga is not for the idly curious or the uninitiated. Because of its potential for physical and mental abuse it is recommended that one receive guidance from an experienced teacher.

Jñāna Yoga

Traditionally referred to as the path of knowledge, Jñāna Yoga asserts that all claims to knowledge are representative dimensions of God's existence. By pursuing all disciplines as fragmented keys to the whole, Aurobindo believes it is possible for one to arrive at an understanding of the inner workings of God through nature. Whether one's occupation be science, philosophy, or art all knowledge will ultimately lead to the primacy of God's existence.

At the onset of one's intellectual search there is the tendency to get caught up in temporal matters mistaking appearances for reality. Through discrimination, detachment, concentration, self-discipline, and meditation, it is possible to develop what Aurobindo refers to as an 'illumined vision' and to see 'God through the data of science, through the conclusions of philosophy, through the forms of Beauty and the forms of Good. . .'[20]

In order to acquire this shift in perception, one must progressively shed the ethnocentric layers of cultural conditioning and be willing to open one's consciousness to all possibilities. It is a method that T.H. Huxley recommends that one "sit down before fact as a little child, be prepared to give up every preconceived notion, follow humbly wherever and to whatever abyss nature leads," or he cautions 'you shall learn nothing'.[21]

Bhakti Yoga

Since the ultimate goal of yoga is union with God, Bhakti Yoga seeks to achieve this unity through love or the way of devotion. Much has been written about the value of love as a necessary ingredient for the very survival of the human species. Given the variety of interpretations that people ascribe to love is it any wonder that we are still far from achieving that which we presumably espouse ?

Perhaps Aurobindo's concept of love can be compared to Socrates's belief that "to love is to bring forth upon the beautiful, both in body and in soul".[22] It is both a longing for immortality and a union with that which is eternal.

The materialization of love is not a magical or haphazard affair. Like a dormant seed it can only grow under optimum conditions. Envy, jealousy, anger, hatred, ignorance, and selfishness can only give birth to actions that are anathema to love. As nothing pure can ever arise from an unclean vessel, so too must one assiduously work toward the cultivation of good thoughts, words, and deeds. Through kindness, compassion, self-control, detachment, and purity of mind and heart one travels the arduous path of spiritual development. Eventually, "the heart", Aurobindo writes, "undergoes an intense spiritual change and becomes the radiantly unfolding lotus of the spirit".[23] Thus, all actions assume a form of worship and self-offering to God.

Karma Yoga

In the *Bhagavad-gītā* we are told that "fixed in yoga do thy actions".[24] Implicit in this ethical injunction is the belief that only through selfless acts do we have the power to create and transform ourselves and humanity. It is the duty of every person, the Buddha says, to treat everything and everyone as seeds worth sowing. The Buddha's moral imperative is similar to the Golden Rule as it is to Kant's categorical imperative to treat others as ends rather than as means to an end.

Thus, the goal of Karma Yoga involves the performance of altruistic acts with complete disregard to the fruits of one's labour. The tendency for egotistical self-gratification, fame, power, and the desire for success must be subjugated and transformed so that whether one is praised or blamed one acquires a certain degree of equanimity and detachment from the results of one's actions. One assumes a quiet certitude as one gradually surrenders to the will of God. How one determines what that will is not as difficult as it may appear for any act that is predicated on egotism or self-interest is surely not of the Divine. It has been said that total abandonment and humility is the quickest way to God so that "in the end not desire, but the consciously felt will of the Eternal remains as the sole driver of our action and the sole originator of its initiative".[25]

Conclusion

The purpose of this paper was to articulate Sri Aurobindo's philosophy of spiritual transformation. In his synthesis of Eastern with Western metaphysics he asserts a position known as integral non-dualism whereby both matter and spirit are held to be ontologically real.

Through a distinction between knowledge and ignorance, Aurobindo asserts that the former is characterized by a perception of the inherent unity of all existence. Ignorance, on the other hand, postulates a dichotomy among all levels of reality and as such, is incapable of apprehending true knowledge.

Aurobindo believes in the evolutionary and spiritual development of the material world. Contrary to technological advancement, humankind has not yet arrived at its final resting place. Through a process known as integral yoga, Aurobindo contends it is possible for humanity to achieve progressively higher levels of consciousness aimed at human perfection. By cultivating knowledge, strength, love, self-discipline, purity of mind and heart one can become a cooperative partner with God in transforming the material world into a life divine.

NOTES

1. Werner Jaeger, *Paideia The Ideals of Greek Culture,* Vol. I, trans Gilbert Highet (New York : Oxford University Press, 1939), p. 168. See also, Rene Dubos, *A God Within* (New York : Charles Scribner's Sons, 1972)
2. For a discussion of Aurobindo's philosophy see Haridas Chaudhuri and Frederic Spiegelberg, eds., *The Integral Philosohphy of Sri Aurobindo* (London : George Allen and Unwin, 1960) and S.K. Maitra, *The Meeting of The East and The West in Sri Aurobindo's Philosophy* (Pondicherry, India : Sri Aurobindo Ashram, 1968)
3. Aurobindo Ghose and The Mother, *The Destiny of Man* (Pondicherry, India : Sri Aurobindo Ashram, 1969), p. 13
4. Contrary to attendance at religious functions, Aurobindo distinguishes between the religious and the spiritual in the following manner. Religion, he argues, is essentially closed for it is based on dogma, tradition, ritual, and ceremony. Conversely, true spirituality is grounded on the premise that "God is one but men call him by many names." Aurobindo asserts that the spiritual person is one who has undergone a "conversion" and has achieved a complete union with God. The Christian statement, "I live, move, and have my being in God" is an example of what Aurobindo alludes to. For further discussion see Aurobindo Ghose, *The Life Divine,* Vol. II (Pondicherry, India : Shri Aurobindo Ashram, 1973), pp. 856-857, 881, 890
5. Underhill claims that mysticism is a word that has been grossly misunderstood. She defines mysticism as "the science or art of the spiritual life." Evelyn Underhill, *Mysticism* (New York : E.P. Dutton, 1911), p. xiv. See also, Ibid., *The Spiritual Life* (New York: Harper & Row, 1936) and Pitirim Sorokin, ed., *Forms and Techniques of Altruistic and Spiritual Growth* (Boston : The Beacon Press, 1954)

6. Aurobindo Ghose, *The Life Divine,* Vol. I (Pondicherry, India : Sri Aurobindo Ashram, 1973), p. 121
7. See *Plato's Republic*, trans. G.M.A. Grube (Indianapolis : Hackett Publishing Company, 1974), Book VII, 517
8. Aurobindo Ghose, *Savitri A Legend and a Symbol* (Pondicherry, India : Sri Aurobindo Ashram, 1972), p. 20
9. Haridas Chaudhuri, *Integral Yoga The Concept of Harmonious and Creative Living* (San Francisco : California Institute of Asian Studies, 1965), p. 21
10. Aurobindo Ghose, *The Synthesis of Yoga* (Pondicherry, India : Sri Aurobindo Ashram, 1955), p. 2
11. Sarvepalli Radhakrishnan and Charles A. Moore, eds., *A Sourcebook in Indian Philosophy* (New Jersey : Princeton University Press, 1957), p. 634
12. Ludwig Wittgenstein, *Philosophical Investigations,* trans G.E.M. Anscombe (Oxford, England : Blackwell, 1953), p. 178
13. For a specific discussion of Aurobindo's rebirth hypothesis see Aurobindo Ghose, *The Riddle of This World* (Pondicherry, India : Sri Aurobindo Ashram, 1933), pp. 58-60 and Ibid., *The Problem of Rebirth* (Pondicherry, India : Sri Aurobindo Ashram, 1952)
14. Joseph Politella, *Taoism and Confucianism* (Iowa : Sernoll, 1967), p. 10
15. The epistemological primacy of the cause and effect of mental cognition has been asserted in the *Vedas*, the *Upaniṣads*, the *Dhammapada*, and the *Bhagavad-gītā*. See Sarvepalli Radhakrishnan and Charles A. Moore, eds., *A Sourcebook in Indian Philosophy,* pp. 110-112; 173-175; 292-296
16. See O. Carl and Stephanie Simonton, "Living Without Cancer", in Willis Kinnear, ed., *Thought As Energy* (Los Angeles, California : Science of Mind, 1975), pp. 75-85. See also, Irving Oyle, *The Healing Mind* (New York : Pocket Books, 1976) ; Kenneth Pelletier, *Mind As Healer Mind As Slayer* (New York : Delacorte Press, 1977); Franz Alexander, *Psychosomatic Medicine* (New York : W.W. Norton & Company, 1950); Norman Cousins, *Anatomy of An Illness* (New York : W.W. Norton & Company, 1979)
17. Aurobindo Ghose and The Mother, *On Education* (Pondicherry, India : Sri Aurobindo Ashram, 1966), pp. 11, 71. The value of "meditative thinking" as opposed to "calculative thinking" has also been discussed by Martin Heidegger in *Discourse On Thinking*, trans. John M. Anderson and E. Hans Freund (New York : Harper & Row, 1966) pp. 46-59
18. Aurobindo Ghose, *The Synthesis of Yoga,* p. 31. See also Arthur Avalon (Sir John Woodroffe), *The Serpent Power* (New York : Dover Publications, 1974)
19. Haridas Chaudhuri, *Integral Yoga,* p. 58
20. Aurobindo Ghose, *The Synthesis of Yoga*, p. 497
21. Quoted in Victor Goertzel and Mildred G. Goertzel, *Cradles of Eminence* (Boston : Little, Brown and Company (1962) p. VII
22. *Symposium*, trans. Michael Joyce (London : Everyman's Library, 1935), 206 a-c
23. Aurobindo Ghose, *The Synthesis of Yoga*, p. 550
24. Quoted in Robert McDermott, ed., *The Essential Aurobindo* (New York : Schocken Books, 1973), p. 8
25. Aurobindo Ghose, *The Synthesis of Yoga*, p. 97

Restructuring Education for a Learning Society

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WHILE striving to establish a prosperously enduring life, man's effort to manage information through education, research, and development is amidst constraints of space, time, ability, and facility. In this context, the task central to education which in all essentials is supposed to furnish an intellectual infrastructure for research and development 'through organized and sustained instruction' (Faure, 1972) appears to be building fast human resources, and accelerating his effort to establish harmony with the sudden emergence of information and 'extension' of abilities in the McLulanian sense in order to provide better deal for his kind in life.

Native Foundations

Every country intending to make a deliberate attempt to employ education as an instrument of national reconstruction and development (ECR, 1966) has to consider the task of restructuring the system on a native foundation of 'paths specific to each' (Kirpal in Faure, 1973) in terms of present input, existing institutions, avenues of work and productivity, magnitude of gap with the advancing world, short-comings like illiteracy, and population exigencies. The purposes and objectives of reconstruction and develpoment will have to be stated in practial terms. The ground characteristics and the informational, human, and material inputs will have to be considered in planning for restructuring or establishing a system.

Restructuring Ambitions

The task of restructuring education has become not something sudden to be achieved but one of gradually establishing a system of continuous learning and constant review for enlightened living of learning to be (Faure, 1972). The words current in the educational parlance, like formal education, basic education, adult education, social education, non-formal education, community education, recurrent education, continuing education, universal education and life-long education, and even population education and family life education, represent a growing desire to treat the entire human living in an educational perspective to make it efficient, productive, enlightened, and comfortable. Are the terms not simply restructuring ambitions yet to be fully realised ? The answer obviously is a strong affirmative.

'Formal education' refers to essential, defined, and institutional education given during the growing years. Basic education (Phillips, 1975) is meant to fulfil 'the minimum set of learning needs for the individual to function in his society and his physical environment' during the primary educational years (Simkins, 1978). Adult education refers to education of the formally uneducated or partially educated grown-ups whose primary concern is some already pursuing avenue of livelihood and already accepted roles in life. Community education is designed to serve educationally people in the community outside the formal system. Social education was conceptualised to take 'formal education to to the world outside' helping development of immediate 'social skills'. Non-formal education was developed to mean 'organized education outside the formal system'. It is 'all that does not take place in schools' (Grandstaff, 1978). Recurrent education refers to periodic recurrence of learning opportunities, mostly formal or special, as conditions change in one's life (Emmeriz, 1983). Continuing education is suggestive of education pursued beyond formal education while in occupation, formal or otherwise, at points where upgrading one's knowledge and functional standing is needed. Life-long education is in essence a reconceptualisation of the primary concept of education representing the self effort extended 'through continual interaction with their thoughts and action, education and learning' directed at full development of the personality (Faure, 1972).

Influence All-pervading

What is of practical importance is that in any society trying to be efficient and to maintain itself so, education is bound to become an all-time operation impressed upon all unceasingly everywhere at every point of man's living endeavour. This reconceptualization has thus become necessary.

Education is building future; it continues without break. Children and adults alike need education. Education takes place everywhere. On all points of human thought and action education is essential. It is indeed continuous learning for enlightened living. Its influence is all-pervading.

Three Channels, Four Approaches

Drawing our attention to total reform, late J. P. Naik (1977), a veteran educationist of the yesteryears, favoured working towards creating a learning society and providing facilities for life-long learning for all, through a comprehensive educational system which will integrate all the three channels of formal, non-formal and incidental education, giving every individual adequate opportunities throughout life to learn and teach according to one's likes. The four approaches he reviewed mean deformalization, transformation, summation or addition, and intergration or synthesis of educational efforts. Evidently effort then should have been directed to attempt some sound restructuring of the system for learning to be.

A system of education not only for lifelong learning for establishing a society of individuals functioning and functionally effective but also for a creative society which seeks its owm epigenesis in terms of objective-based progress is needed, and hence the present need is restructuring in the direction. We need a society with its education, research and development subsystems co-ordinating in the realization of objectives of progress efficiently.

Restructur ing Proposed

For transformation into such a society of individuals in a country like ours, the restructuring which should be essentially simultaneous, gradual, concerted and multi-directional may be contemplated on the following lines.

(*a*) *Differently Paced Routes:* The general education at least and wherever at present possible all educational avenues should be recast to have two differently paced routes—short and long—in each subject of study. There should be provision for switching over from one to the other at points of comparable chunks of content coverage, or at points after obtaining terms completion certificate.

(*b*) *Formal Stem Courses* : The general education and if possible all courses in formal institutions which form the stem of the system of education should be covered in the forenoon hours only mostly through classroom instruction, discussion, seminar, and such other methods of verbal interaction. New media should be freely employed here. There should be liberal provision for increased intake of students.

(*c*) *One Medium of Study and Instruction* : The mother tongue or a language of intensive study the pupil chooses or is made to pursue should be the language adopted as the medium of instruction in all courses he undergoes. That is, there should be no other language to be studied in the regular forenoon courses of the formal stem type.

(*d*) *Special Branch Courses* : There should be special branch courses of roughly three-month duration, each to be run in the afternoon, evening, or night sessions in special branch institutions—government, recognized private or individual—independent of regular, formal forenoon stem instiutions.

(*e*) *Work Complement :* The special branch educational institutions or courses should provide education through 'work experience' or learning by doing facilities. Here the work is the book. It is necessary here to give an understanding of 'the means and media' of work 'besides developing basic skills' to operate with 'precision and quality' (Blandow and Rao, 1973). That is, the courses may provide laboratory or work complement of general education, additional language study as required under the constitution or state legislation, or practical education in a host of special areas of human endeavour like art, craft, music, dance, drama, accountancy, weaving or whatever immediate development of society or work environment demands. No line in human purview should be left untouched in these courses.

There could be (i) complement laboratory, practical or work branch courses complementing regular forenoon formal stem courses; rudiments of research disipline may be introduced in such courses; (ii) remedial special branch courses to help drop-outs or those lagging behind 'bridge' into the forenoon stem courses; (iii) 'buffer' courses to 'supplement' or give depth or breadth either for those completing a stem course by the short channel or for those who happen to end a stem course at odd time of the year; and (iv) development or productivity objective based 'alternative' courses meeting the continuing or recurrent or life-long educational expectation. These afternoon, evening, or night branch courses which reduce the constraints of space and time, could be run independently even by recognized individual experts of the locality in the respective areas of their work or expertise. The brancher, therefore, accommodate a variety of abilities. More often than not it may happen to be an area eventually not covered so far in the present rigid system. This would in effect result in the use of rare avenues and unused facilities. As far as possible no course should extend beyond three months. This requires all long curricula to be split into short spells of three months.

Some of the teachers from the formal forenoon institutions may be absorbed for working in the special branch courses or institutions by special or part-time appointment. A majority of the teachers free in the afternoon could be commissioned to write or work for developing the proto-type of various kinds of instructional literature or material.

(*f*) *Incidental Learning :* Learning incidental at home, work and play should by defined, scheduled, recorded, and evaluated. A year's incidental learning evaluated in terms of what the boy or girl is able to do and accumulated at the end of the course, long or short, should be treated as equivalent to a three-month course taken in the afternoon.

(*g*) *Non-formal Education* : The non-formal education of all kinds may be covered in the afternoon, evening or night branch courses. This to some extent is to discriminate between formal and non-formal by regarding 'those educational activities that lie outside the recurrent central core of schooling functions' (Grandstaff, 1978).

(*h*) *Expanding Purview* : The education of the non-formal, social, continuing, adult or androgogical, or even life-long kind can well be brought under the purview of three-month special branch institutions. Private educational enterprise must be encouraged here. All productive avenues in human life of any level or intensity can be dealt in the form of branch courses. Like a growing tree, new branches emerge in this system of education meeting the needs of the individual. The pressure on formal institutions will thus get reduced, as, unlike the present system, 'paths specific to each' state or locality and existing bases will find a place in the form of branch courses.

(*i*) *Branches at All Places :* The afternoon, evening or night courses could be instituted in almost all places of work, industry, art, craft, business, temples, or places of national reverence, and at places where traditional individual expertise is available. Instituting apprenticeship or internship should be explored wherever possible.

(*j*) *Multiple Formal Entry Points :* There should be provision for entry into the system of formal stem courses at multiple points. This implies, as Simkins (1978 Prospects VIII (2), p. 187) noted, a mechanism that 'does not preclude those educated non-formally from re-entering higher levels' requiring creation, of 'ladders', 'buffer cycles', or 'bridges'.

(*k*) *Built on the Existing Bases :* Each course to be established should not discard the already existing working conditions and as such should be linked with, as far as possible, objective-wise.

(*l*) *Competency-based Eligibility :* Eligibilty to enter any course should be based upon entry competency-based test performance decided in relation to the particular course which a pupil seeks admission into. The pupil should be deemed to have completed a course if he or she executes the items that he or she is expected to learn 'to do' and should be certified in terms of the number of credits accumulated.

In the National Context

The educational statistics indicate that in our country the number of children in the 11-14 years group outside the school outweighs one-and-half times the number inside (Selected Educational Statistics, 1982). This is the national context that speaks indeed of the magnitude of the problem of educating all. How ? Should all be educated identically alike ? Obviously, in the context of the hard facts of our nation, we have to think of approaching the problem from the reconceptualization and restructuring points of view. The system proposed above with the scope for unlimited expansion in the non-formal and incidental channels will be able to meet the expectation. Making learning available to all at all times through all possible means in every area of human and national effort unceasingly should be the basic condition governing any effort to restructure our system of education.

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Educational Problems of Socially Disadvantaged Children

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THE practice of imparting education on a standardized pattern, the inevitable consequence of democratization of education, has not been pedagogically successful, as is evident from the large number of failures and drop-outs. More importantly, the absence of outstanding achievements of students exhibiting real entrepreneurial and investigative skill, inspite of the large numbers who are exposed to education, is difficult to explain. The main reason for this state of affairs, is the inability of the learners to cope with the system of education as it is imparted in our schools. Among other things, the failure to recognize the crucial role played by the social structure to which the learners belong, in shaping their attitudes, aspirations and abilities, has made it difficult for the learners to benefit from the present system of education.

Environmental Role

"To be human is...not to be Everyman; it is to be a particular kind of man, and of course men differ"[1], remarks Clifford Geertz to highlight the fact that every human being's individualized characteristics have to be respected when organizing people into groups, shaping their behaviour and attitudes, and utilizing their talents. In this process of becoming a particular kind of man, the social structure to which a person belongs plays a vital role, because one's system of values, attitudes, initiatives, and inhibitions are to a large extent shaped by the environment. The individual cannot separate himself from the environment because it is the environment that offers him the infrastructure to build up his personality. It is here that he first learns about the role that is either ascribed to him or has to be achieved by him. It is clear that in our present society, with its rapid changes in the social structures, the ascribed role is becoming limited to the family and here, too, it is rather weak. It is the achieved role that is becoming relevant today. But once again, in order that this achieved status be effectual, we have to accept the existence of a group, however amorphous it may be, within which the achieved role of the individual may be functional. This trend is of particular interest to us in India today, because we are not very sure of the demarcations of the new social groups that are fast emerging in the place of the old caste system. In our anxiety to do away with the old systems which had constructed artificial barriers among people and misguided our assessment of human potentialities, we hope to usher in a new egalitarian society in which standard patterns of administration, educational, and social life will be possible. But this has not been possible, because when old barriers are broken down, new enclosures spring up and these are based on factors such as economic status, political leanings, occupational interests, and religious beliefs. The tendency of the members of such new groups to live together creates a solidarity among them, which, with the passage of time, becomes a well-established society with its own system of values and aspirations. Therefore, the impact of a group on an individual, however weak it may be, is still present today, and so, any assessment of the individual should necessarily take into account the characteristics developed by him due to his environment. Extending the Humboldtian hypothesis about the human mind being individualized, we can say that each individual also bears traces of the socio-economic environment and these will have to be taken into account in assessing the individual's potentialities as well as in shaping his behaviour. Failure to recognize the value of this feature will make all our welfare measures ineffective and in particular our teaching programme will be counterproductive.

Demands of the Future

Reviewing the structures, functions, and curricula of schools at present, many people feel that the learners are not really being prepared to meet the demands of the future, because the present system is expanding its energy, according to Alvin Toffler, "to cranking out Industrial Men—people tooled for survival in a system that will be dead before they are". It is estimated that in the future "machines will increasingly perform the routine tasks, men the intellectual and creative tasks". Therefore "the technology of tomorrow requires not millions of lightly lettered men, ready to work in unison at endlessly repetitious jobs, it requires not men who take orders in unthinking fashion, aware that the price of bread is mechanical submission to authority, but men who can make critical judgements, who can weave their way through novel environments, who are quick to spot new relationships in the rapidly changing society".[2] Being in the grip of such a technological development and realizing the tremendous changes that are needed in the mental make-up of individuals to cope with the new demands of the technological age, society in general and the socially disadvantaged in particular, feel that "the urban schools are failures because the present ends of the schools are not acceptable as the proper ends by...students and parents from impoverished or minority groups".[3]

Social Disadvantages

The learning process may be hampered by psychological, physical, and sociological factors. Whereas problems arising out of psychological and physical defects can be rectified or overcome, since the defects have clearly marked and readily observable features, the strategies for solving the problems arising out of social disadvantages are very vague and tentative, because of the indeterminacy of the boundaries of the social group in our times. Even in identifying the socially disadvantaged persons, different criteria have to be used in different countries. In the West, especially in the USA and the UK, where there is a heavy concentration of immigrant population, ethnicity offers a practical criterion for identifying the socially disadvantaged person. The California Project on Teaching Teachers of the Socially Disadvantaged Children (1965) considered ethnic minority, financial impoverishment (i.e. below $3000 per annum) and educational backwardness to identify the socially disadvantaged among their learners. In our country, however, the criterion of ethnicity cannot be so easily and conveniently used to classify people. Besides, the caste system which was once used to divide people, is now taboo and efforts are made by the government through its policy of reservations to educate and employ the erstwhile backward communities. Many who have used these opportunities have thrown away the shackles of their class-occupations, and have entered the higher income level; they could now be described as being in a really advantageous position. Therefore, the socially disadvantaged persons in our present context will be those who are economically poor (below Rs. 4000 per annum) and not having made use of the chances offered to them by the government agencies, still bear the vestiges of the caste system and pursue occupations designated to their castes in the past. Since their living conditions are precarious, their accessibility to information limited and achievements of their group rather low, these learners develop fears and prejudices which interefere with their learning efficiency.

The following may be posited as the characteristics of the group which has emerged as the result of economic conditions and personal lethargy :

1. A sense of segregation, leading to isolation and a negative outlook.
2. Limited experience, nurtured on hearsay and proclamations made by their leaders.
3. Group solidarity with its own system of ascribed and achieved roles, taboos, beliefs, and laws.
4. Recognition of skills and handiwork, faith in physical strength, sometimes leading to the view that might is right.
5. A feeling of longing for more comforts and money.
6. A strong sense of self-preservation, leading even to the formation of gangs.
7. A sense of disappointment, leading to a belligerent attitude to society.
8. Poor living conditions, unhygienic surroundings, often leading to sickness.
9. Speaking a dialectal variation of the standard language.
10. Surrounded by illiterates.

The learners from this background with its punitive system of laws and practices are put through an educational structure which is based on :

1. A uniform pattern of education.
2. Imparting of knowledge for its own sake.
3. A rigid standard of consistency.
4. An ideal aspirational level of the learners.
5. Measurement of achievement in terms of success in experiences within the verbal realm.

Learning Problems

When the learners from the socially disadvantaged section enter into such a system, they feel that they are in a new world with a different system altogether. Consequently, the much-needed reinforcement for success in the learning programme is not offered by the environment in which the learner lives. It could even be said that the learner's environment undermines the efforts of the school system. Inside the school the learners are presented with a role which is different from the one they are accustomed to or aspire for in their society. Social values regarding human life, creative achievements of man, human relations, co-operation with others, development of moral character, human intelligence and abilities, feeling of nationalism, and economic success inculcated in the school are either totally reversed or diluted in their environment. Inspite of the training and encouragement given in the school, these learners are unable to make an adjustment between their role as academically defined and the actual role they have to play in their group, and so, urged by the desire to be accepted among their group, they easily regress to their original role. Thus, whatever is learnt in the classroom is done perfuntorily just to satisfy school regulations and never as something important to their development as individuals. Moreover, this constant shuttling between two environments will cause such a mental strain on the learners that they will develop disorders of thought, feeling, and behaviour.

The learners from socially disadvantaged sections are baffled by the quantum and range of knowledge proposed in the school curriculum. It is true that the radio, the newspaper, and, to a certain extent, the television have enabled people in all situations in life to be exposed to, and benefit from, the information boom all around us today. But when some of the new gadgets and concepts do not become a part of one's life, they remain merely as pieces of information and are not manipulated for innovations. Incidentally, it can be noticed that these learners have a very poor range of vocabulary in matters which are of common interest to most of the other learners in the school. Relatively, these learners have to learn more new things in the school.

Much of the teaching in the school is based on the notion of transfer and exploitation of the already known facts. But it is usually the transfer of skills and exploitation of details which are familiar to the children from the affluent and enlightened homes. So, the disadvantaged learners will have to, first of all, find out what has been assumed before comprehending the new. Their disappointment at not being able to cope with the curriculum slowly turns to resentement against the new environment which does not seem to respect their knowledge and capabilities. As a result, these learners are reticent even when they have something worthwhile to offer. A case in point is the silence they maintain because they are ashamed of their pronunciation and intonation. The dialectal variations in the system of their language, though of interest to the descriptive linguist, are not accepted by the teacher and their companions, and so these learners are constantly subjected to correction by the teacher and ridicule from the peer group. They have to conform to a 'new' pattern of the language which, for many, amounts to a second language. Thus, the learners have to, once again, manipulate two systems, with the painful realization that their own system is not the favoured one.

In the present school system success or achievement is measured in terms of verbal knowledge. The socially disadvantaged children who are capable of doing things with their hands, find that the system does not have provision for equating practical demonstration of comprehension with verbal articulation. These learners feel neglected and frustrated because their talents cannot be demonstrated in this system.

The curriculum is based on the assumption that all learners have the same level of aspiration in life and that, too, an academic one. Such an assumption is convenient to the teacher, because he can use a uniform methodology. Ultimately, the price paid for convenience is very high, because a good percentage of learners remain mediocre in life because their talents had not been propped up with the necessary academic knowledge. The socially disadvantaged learners, fully conscious of the odds against which they have to struggle even in their normal day-to-day affairs, are dismayed by the heights to be reached in life. Besides, the accomplishments of their peers, the facilities at their disposal, and the influence they can command in society, make these learners feel diffident in competing with them. Therefore, encouraged by the achievements of their leaders, they set their goals according to the norms which have been declared possible by their group. These norms are confined to craftsmanship, which in itself is not all that bad, provided the level of attainment in the various crafts is very high. But, unfortunately, the level is usually very low for want of the concerned academic knowledge needed to raise it to a very high level of precision. The curriculum does not have provision for recognizing these aspirations of the learners and provide them with the necessary encouragement and knowledge which can make these learners blossom forth into affluent and respected artisans.

Under these circumstances, it is clear that the curriculum that is imparted in our schools to these socially disadvantaged children does not in any way make use of their talents and potentialities, but expects them to conform to a pattern which is so new that these learners find that everything has to be learnt from the beginning.

Change Agents

If the educational problems of the socially disadvantaged learners are to be identified and a suitable methodology evolved for teaching them so that the best in them can be fully utilized, we need teachers who are aware of the personality and social characteristics of these learners, their family structure, the influence of the environment on them, the strengths of their groups, and the special learning problems of these learners. These teachers should consider themselves as 'change agents'[4] and identify themselves sympathetically with their role. They should be capable of introducing such measures within the curriculum which, while imparting the knowledge required by the learners, will also help them to develop as persons and come out of their state of diffidence. These will include, among other things, the following :

1. A demonstration of their knowledge of the culture of the group.
2. Knowing the dialect of this group of learners.
3. Raising the aspirational level of these learners.
4. Broadening the experiential knowledge of these learners.
5. Giving a status to the materials used by these groups.
6. Providing students with success experiences outside the verbal realm.
7. Showing that teachers really care for these learners.
8. Using a flexible schedule to allow them to work at their own speed.
9. Awareness of the conflicting value systems which block communication.

The teachers ought to be trained specially for this purpose. Special summer courses with intensive follow-up programmes throughout the year, should be organized to train teachers to develop the proper attitudes towards such learners, prepare teaching material to supplement the regular syllabus, and devise strategies to be adopted in the classroom to suit the abilities of these learners.

In our preoccupation with imparting knowledge, we should not lose sight of the learners who receive the knowledge. Every learner is an individual who acquires knowledge in his own way. According to E. Goffman, we spend less time making things, getting and spending them, than we do trying to put the stamp of our own individuality upon them, for our main business is, in a sense, the fabrication of our own identities[5]. The socially disadvantaged learners, too, have an identity to project and our educational strategies should recognize this and use it most advantageously.

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Education in Modern India : National Goals

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INDIA has a long past of thousands of years and yet even during the ancient times education was a very important aspect of life. During the Vedic and Upanishadic periods of Indian history, there was a regular system of education though not in the modern technical sense. There was, of course, no administration and organization of education as it is today. It developed gradually over the years.

Although, today, the system of education in our country, as in other countries, is based on scientific methods of teaching and learning, it does not follow that these methods and approaches are effective so far as the mental, intellectual, and physical development of students with different cultural, educational and intellectual backgrounds, is concerned. As a matter of fact, our system of education is suffering due to the absence of proper and clear national goals of education. A system of education can work effectively only on a sound and stable foundation of national goals.

Time and again, severe criticism is levelled against the present-day system of education. Surprisingly, such criticism is made by those who are at the helm of affairs in our country. Sporadic and occasional suggestions are lavishly offered by the political, social, and even educational leaders. Yet, such suggestions made on various occasions are never implemented. What India needs today is a strong common policy of education and also a stable system of education. What is needed is uniformity, unity and conformity, rather than diversity and variety in the basic structure of education.

Even after thirty-seven years of Indian Independence we have not yet been able to raise our literacy percentage higher than 36.23

(excluding Assam).[1] It obviously means that we have not regarded education as a great national power as in the USA, the USSR and other developed countries. Education leads to enlightenment of the masses and enlightenment leads the people to use their adult franchise wisely and discriminately.

In this background, let us make an attempt to evolve fundamental, stable, and broad national goals of education for modern India. Once we arrive at these stable goals of education, details regarding the course outline, etc. can be left to the experts in the field of education at different levels.

National Goals of Education

1. *Knowledge of Indian Culture and Philosophy*

As we are thinking of goals of education for modern India, it is quite obvious and necessary that the system of education must be based on Indian culture and philosophy. Each and every student must be well-acquainted with the cultural background of India and also must be taught to be proud of the glorious past of his country. He must be made to know how his country is well-known for its high philosophy and sound culture.

It is very unfortunate that our students going abroad for their education or even for jobs, do not have a thorough orientation in Indian culture and its history and philosophy. It very often happens that the foreigners with whom our students and other people come in contact, are better informed and better read than our students in the area of Indian culture and history. This results in a poor show by our students in the presence of the foreigners.

It is, therefore, quite essential that right from the beginning our students should be thoroughly acquainted with our culture and philosophy. It should be made known to them either through talks or through practical programmes in schools and colleges.

2. *Moral Education*

The second important goal of education for modern India is a sound moral education. Moral education must lead to moral behaviour. All religions preach morality. And morality is a universal aspect of all religions. They all teach us to speak the truth, to love our neighbours, and also to refrain from stealing and other such bad habits.

Thus, instead of harping on the formal differences among religions, it is better to emphasize the moral aspect of religions. After all, what is needed is to educate our students to behave well according to the moral norms. They should be taught to observe certain rules of conduct so as to develop a strong moral character. Swami Vivekanand has said: "What we need is a character-building, man-making education" and he is perfectly justified in what he has said.

Schools and colleges, therefore, should try their best to develop such moral character and behaviour among their students through various programmes and activities.

3. *Scientific Attitude*

This is the age of science and technology. Scientific discoveries and inventions have been so rapidly taking place that every country has to keep pace with them and apply the results for the benefit of its people.

What we, today, in our country need is to develop scientific attitude and knowledge in our students. The wonders of science should be made available to them. Our students studying in schools and colleges should be able to handle scientific apparatus and machines with their knowledge of science. An atmosphere of science and technology has to be created in educational institutions through various activities such as 'Science Clubs' and other activities.

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[1] India 1983 (1981 Census)

15095

Our students today are far behind students in other developed countries in the field of science and technology. They realize this fact when they go abroad for further education in the subject of science or to take up jobs where scientific knowledge is needed.

4. *Physical and Military Education*

Physical education imparted in our schools and colleges today is not at all satisfactory in that it does not help the students to build their physique properly and make them realize that after all a sound mind is likely to be developed only in a sound body.

In good old days we had a number of gymnasia which used to train our young people in a very systematic and scientific manner. There was an atmosphere of physical culture in the country and young boys and even girls used to be very fond of physical activities and games.

Look at the youth of our country today. They are physically weak, morally bankrupt, and scientifically backward. They dress like their cinema heroes and heroins and manifest feminine tendencies more than masculine.

If India has to survive in the race that is going on in different countries, it has to pay greater attention to the physical development of its young generation, along with their moral and cultural development.

Not only that physical education should be made a compulsory subject in schools and colleges but it should be given very rigorously and regularly. Physical education should not and does not mean only physical exercises but also games and other activities including manual labour.

While the foreigners have taken to Yoga-culture so seriously and to some extent passionately, we in India have almost neglected it though Yoga belongs to our country out and out. The Yoga-postures should form a very important part of physical education in schools and colleges.

Manual work is also a sort of physical training if it is done in a proper spirit with the dignity required. Mahatma Gandhi emphasized this aspect of manual work and dignity of labour through his scheme of Basic Education though, however, no proper attention was paid to it.

Physical education should culminate into military education during college days. Military science is a subject which some Indian universities have introduced in their colleges. Yet, however, it is not so popular as it should be.

What India needs very badly today is a strong Army, Navy, and Air Force because India has to be ready to face any foreign aggression in the future. Military education should, in fact, be compulsory for every youth of the country.

The poor performance made by our athletes in the Asiads or in the Olympics is a clear sign of our backwardness in the field of physical activities and games. Are we paying that much attention to this very vital aspect of our education ?

Schools and colleges should, therefore, chalk out their courses and programmes accordingly, so as to create in the students a taste for physical education including military training.

5. *Health Hygiene and Cleanliness*

Mahatma Gandhi had long ago realized

the educational value of health education and hence he made an attempt to introduce it through his scheme of Basic Education. He was very keen and anxious to introduce personal and social hygiene and cleanliness in schools, starting with primary schools.

This important aspect, suggested by him, was, however, not very much popular. As a result, our children in schools and youths in colleges are not yet aware of the value of personal and social cleanliness leading ultimately to national cleanliness. We are very good at repeating sayings and slogans like "Cleanliness is next to Godliness", and so on. But such slogans are never put into practice. If Cleanliness is next to Godliness, it means its value is supreme.

Education is a moulding of character and also of habits. Habits of health and hygiene have to be inculcated through educational programmes. Once our students develop such habits they will make use of them when they grow up into citizens of tomorrow.

But we have completely neglected this important aspect of education, thinking that it has nothing to do with education of the child. When Mahatmaji talked and wrote about the silent social revolution he had in mind this vital problem of health, hygiene and cleanliness, both personal and social. He revolted against the traditional way of thinking of education in that it is not only to teach the three R's. He, therefore, insisted on introducing such new topics like manual work, craft-work and cleanliness in the school curriculum.

We are very fond of praising the foreigners for their personal and social habits of cleanliness but at the same time avoid to imitate them in this respect. We are eager to imitate them in customs, manners and dress but not in the vital aspect of hygiene and cleanliness as a national need.

6. *Vocational Education and Work Experience*

Though a number of attempts have been made through the various education commissions to introduce vocational education in schools and after school life, we have not yet made much progress in that direction. We have, in fact, not thought of it as seriously as we should.

Craft-work introduced in the scheme of Basic education was an attempt to lead to vocational education. But craft-work has now lost its place in schools and vocational education has not yet been popularised.

It is a psychological fact that mere theoretical teaching will not be able to develop the child in an all-round manner. Theory, coupled with practice, always leads to good results. Students in schools and colleges should be able to handle machines. They should be acquainted with a lot of practical work in the areas of different skills and arts.

Manual work is very much disliked by our boys and girls especially at the higher level. We always talk of the dignity of labour and preach the philosophy of Karma Yoga but when it comes to its practical application, we are shy and afraid of spoiling our hands by the dust in the garden or in the farm.

People, including students, in other countries, are habituated to do their own work themselves. They do not depend upon servants or coolies. They do a lot of manual work such as painting the house, handling machines, carrying their own luggage, etc.

Let us gear our educational programme towards developing the habit of vocational and manual work.

7. *National Integration and Patriotic Spirit*

Patriotism has always been described as a very great personal and national quality.

Stories of patriotic heroes are not lacking in India and other countries. During the Quit India movement started by Mahatma Gandhi in 1942 and even during the British rule in India, a number of partiots sacrificed their lives for their nation.

And such a national spirit is absolutely essential if a country is to survive in the struggle for its political existence in the world today. The Jawans who lay down their lives during the wars all over the world, can never do so unless they have high national spirit and love.

It is, therefore, the duty of our leaders to inculcate this spirit in our youths through various activities. Stories of great patriots in the country should be placed before them through books, narration, or films. They have to be convinced that the freedom of our country can be saved only if each and every individual is prepared to die for it.

The problem of national integration has become acute only after Independence. There was no such problem during the British rule in India as all were fighting for one common goal and under the same national flag for the freedom of India.

Today, there is no common goal before the people and hence the problem of national integration. Disintegration has developed because of the linguistic, narrow religious, and communal feelings. If a proper check is not put to such narrow feelings before it is too late, one does not know what will be the fate of this vast land of ours !

Our student-population, therefore, should be taught to think of the whole country as one, irrespective of linguistic or religious differences.

8. *International Understanding*

It is necessary to make our students feel the oneness of the world which is fast developing through science and technology. They should be taught to know that people are people everywhere and—thanks to the scientific and technological advance—people all over the world have come closer today than before.

School subjects like science, geography, etc. should be taught to lead the students to think in terms of the world at large.

When man can reach a distant country like the USA within a few hours and when he could reach even the Moon in such a short time, the feeling of oneness can be easily developed.

International feeling is broader than the national spirit if one realizes the smallness or greatness of one's country through comparison with other countries.

Comparative studies based on the social, political and other aspects can be done at the college level or even at the higher secondary school level.

Young children in primary and secondary schools also can be taught to realize that theirs is not the only country in the world but that there are hundreds of other countries like ours struggling to survive.

A proper educational programme for developing such international feeling and understanding will help solve some of the problems caused by the lack of proper international understanding.

Conclusion

The foregoing discussion was based on some of the fundamental goals and issues of our education today. These goals for our national system of education are suggested with a view to putting them into practice through properly though-out and planned school and college curriculum. An attempt has been made to suggest the foundations while the further brick-work and details are left to the experts and administrators according to the local needs and environment.

Stratification in the Educational System

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STRATIFICATION is a practice peculiar to the Indian educational system. The practice seems widespread in that it afflicts all parts of the system. Stratification, as applied to the educational system, means the working of teachers or teacher-educators in parrallel but separate strata of an educational organization. Consequently. the teachers are prevented from moving to the positions where their services could possibly be more useful. It is because the gaps between the strata cannot be easily crossed that the problems arise. The difference in salaries between, say, primary school teachers and college lecturers would be less important if the better teachers could, by promotion, cross the gap into colleges. A review of literature shows that the practice has received insufficient attention though its effects have to some extent recently been perceived by educationists. Muriel Wasi painfully notes the lack of interaction between different levels, when she observes : "In India, it is distressingly true that school and university teachers seem not to have met at professional level, and that interchange of experience and knowledge between these two levels of educational learning and practice, has, therefore, hardly existed".

It is not intended to give here a detailed study of the problems arising out of the practice, but its influence on the implementation of the new science education programme will be explored with special reference to primary teacher training.

Broadly, four categories of teachers can be recognized in the (academic) educational system of India. Professors and lecturers in the university departments form one category of teachers. Invariably each holds a **Ph. D.** degree and has published a number of research papers. These men and women are concerned with research and guide students studying for post-graduate and Ph.D. degrees. Senior lecturers and lecturers in Arts and Science Degree colleges hold post-gratuate degrees and, in some cases, doctoral degrees also. These lecturers deal with the academic education of men and women beyond higher secondary level. Secondary school teachers who invariably are at least trained graduates deal with the education of boys and girls in middle, high, and higher secondary schools. Primary school teachers are connected with the teaching of primary school children of age 6-11 years. In Punjab, primary school teachers have academic qualifications of matriculation and two years of professional training in Junior Basic Training Schools.

Effects of Stratification

There is no doubt that at each of the four levels, teachers have appropriate qualifications and training. Primary school teachers are trained in Junior Basic Training Schools by teacher-educators whose whole training and experience lie in secondary education. In-service training of teachers too, is, rendered less effective by reason of stratification. Inservice training in science for primary school teachers is given by science graduates trained for secondary schools. After a short-term training session, usually less than one week, devoted to 'modern approaches', these teachers are designated fit tutors for primary level training.

The assumption made is that it is possible somehow to link the level of teaching and teaching skills with the age of pupils. Thus, a primary school teacher because he teaches the youngest children is given the lowest rank. Teacher-trainers (primary) being 'above' primary teachers are equated with secondary teachers, and so on up the scale. The basic idea (assumption) that it requires less skill and professional expertise to teach a younger child cannot be seriously defended. Primary and secondary school teachers adopt different styles of teaching due to the different stages of development and accumulated experiences of their pupils. But who can say that one group of teachers has less need of skill and understanding than the other ? The role of one teacher cannot be rated more highly than that of the other ; each has his own vital role to play in the formation of well-trained socially adjusted adults. Indeed, for many pupils, especially in rural areas, their primary education will be their whole education. This point reasonably assumes much more importance, when, in the context of efforts being made for achieving the goal (which increasing number of children make further and further) of universalisation of primary education, (as an obligatory mandate of the Constitution) the phenomenon of drop-outs, the rate of which is stated to be higher than 50 per cent after a schooling of five years, looms large before the educationists of the country. Once out of the school, the child is lost to the methods of formal school education, due to reasons, both economic and social. In a developing country, certain democratic values necessary for better economic growth and higher standards of living can only be inculcated in the minds of younger children. Unfortunately, a different view about the significance of the primary teacher's role prevails in India at the present time and stratification is the consequence of it. The effects of stratification on primary teachers and teaching are many. The attitudes, teaching methods and initiative of the teachers are all affected, as is the administration of the system.

Attitudes

Secondary school teachers have developed their own characteristic attitudes towards the philosophy of education. When on training as a primary tutor, the secondary teacher, on account of this alien attitude, does not take seriously the short-term orientation courses. These tutors, trained for giving further training in science to primary teachers, assume, because of their own background and experience, that the latter need to know more science content. They, therefore, beign to impart uninteresting factual knowledge during inservice training courses. The philosophy and spirit necessary for the effective teaching of primary science is not absorbed by the new tutors and cannot be passed on to the primary teachers. In this way the existence of stratification between primary and secondary school teachers gives rise to problems of imparting proper training to primary school teachers. As a result, primary teachers do not receive training they actually are expected to put into practice. This is the harsh reality to be recognized. The problem has acutely been felt by the author while inspecting inservice training centres.

Stratification prevents the problem from being tackled from the other end, i.e. by sharing the responsibility for inservice training with primary school teachers. It is the stratification gap which restrains the primary teacher from becoming a teacher-tutor. The experience of the primary school teacher and his value and pride in his work are completely ignored.

The same attitudes and practices seem to prevail at higher levels also. In the science institute, a lecturer with a short course in primary school training is automatically preferred to an experienced primary teacher for a job needing knowledge of primary school children and primary teachers and their problems.

Teaching Methods

The techniques of teaching primary school children are vastly different from those used in secondary schools. The capacity for understanding and thinking at the two levels are quite different due to the difference in their accumulated learning and mental development. Consequently, the approach to teaching in the two cases should certainly be different. The roles of the two groups are so different that the needs of primary school teachers cannot be satisfactorily met by giving the tutors a short-term course. The teacher training given by these inadequately trained tutors is inevitably theoretical and based on the principle 'do as I tell you' rather than 'do as I show you'. In other words, theory and practice are quite divorced. N.K. Sanyal describes the situation accurately when he says that teachers do not do as they are told but do as they are taught. The primary teachers tend to adopt the easier but less effective lecture method.

Administration

Heads of high schools, having primary branches, and Education Officers, including Block Education Officers, are promoted from secondary school posts. Consequently, and quite naturally, they have 'secondary school' attitudes to both teaching and teaching methods. These Officers are not generally aware of the problems and methods of primary education. Therefore, they are sometimes incapable of tendering useful advice to the primary teacher because the latter's problems may not be appreciated. An examination of the syllabus and courses of reading for Junior Basic Schools reveals that science studies were not compulsory during primary teacher training, and if the Officer does not have a knowledge of science, he can provide little guidance and help in the solution of the problems of primary science education. Further, they may have little interest in organizing science fairs or inservice centres for science. As a result, the inservice training programme for science is bound to suffer, and will not bring about the intended results.

Lack of Initiative for Innovation

Another effect of stratification is apparent in the classroom. The primary school teacher, being unpromotable and always at the terminal level, is likely to acquire the characteristics of the label 'terminal status', meaning thereby that his morale may sink when the teacher anticipates a long period for which, under normal conditions, he must stay in the same position, as on entry into service. The result is that his enthusiasm will soon begin to wane. The teacher is likely to acquire a mechanical, routine manner with little initiative for innovation or even incorporating new ideas in his style of teaching. The lack of initiative among primary teachers arises because high level administrators seem to be unaware of the inadequacy of the existing system, the system which gives rise to stratification. The importance of initiative is underlined in the UNESCO document No. 7 where innovation is described as "...the introduction of a new idea, process or technique and its adoption for widespread use to replace the existing practice or technique. It is not change for the sake of change. It is controlled by testing and experimentation".

At present primary teachers lack the initiative for testing and experimenting by themselves on account the circumstances in which they are working.

Resistance to Innovation

A teacher who has settled to a routine habit, can be a threat to the acceptance of a new science programme. The teacher is aware of having enough theoretical training and forms his own fixed style of teaching. His awareness of the gap between theoretical training and classroom realities will make it hard to convince him of the usefulness of the new science programme. Therefore, he is likely to resist the change. This resistance can create problems for inservice training programmes. The effectiveness of training can be doubted. One can take the horse to water but it is difficult to make it drink unless it is his own wish.

Non-involvement

It is on account of stratification, as noted earlier, that 'exchange of experiences' between different categories of teachers is well-nigh impossible under present circumstances. University and school lecturers work on different planes. The status of the different groups is a barrier to the opportunities for the exchange of experiences and knowledge between them.* Consequently, the school teacher, in general, and the primary school teacher, in particular, have little involvement in educational planning at any level. The framing of a syllabus and the development of a suitable curriculum remain the prerogative of the upper strata of the educational organization. The vast experiences of the primary school teachers seem to be neglected. They cannot, as has been explained, even help in the training of new primary teachers. The participation of these teachers in educational planning becomes progressively less and less till it is vanishingly small.

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* The consciousness, incidental to the stratification, is painfully and persistantly so apparent that only recently (1984) a Principal of a Government College of Education asked for the transfer of a school lecturer in physics appointed in his college under the UNICEF scheme to impart pre-service training to the secondary school teachers as required for the implementation of the Science Education Project and in tune with the special philosophy of the Project, namely science is doing, for secondary school science teachers. The UNICEF supplied stocks of library books, in addition to science equipment and science kits for the proper implementation of the science education project.

Opportunities

Clearly the effects of educational stratification cannot be allowed to continue if education for young children is to be meaningful and scientific. The problem is to remove the worst effects of stratification without the upheaval and distress that the sudden and complete abolition of distinctions between different groups of teachers would necessarily cause.

With a view to recognizing the value and experience of primary school teachers, opportunities for their promotion to a higher status are necessary for the better health of the educational system. For sharing their experiences at equal status, the key to the solution seems to lie in providing a channel (or better channels) of promotion for primary teachers showing merit. Primary teachers of merit might attain promotion to either Junior Basic Training Schools or to posts as Block Education Officers. The promotion can considerably improve educationally teacher training and administration of primary schools.

To the Junior Basic Training Schools primary school teachers will bring their experiences of the problems of teaching and teaching methods. Thus, the new curricula of these institutions will satisfy the needs of primary school teachers more effectively. Primary teachers who become Block Education Officers will be better acquainted with the problems of primary education than the present holders of these posts.*

The avenues of promotion suggested for primary teachers should, of course, be parallel with similar opportunities for other teachers. It should be possible, for example, for a secondary school teacher to become a teacher-tutor (secondary) in a post-graduate training college.

Effects of New Promotion Opportunities

One can argue that the provision of opportunities for able teachers to posts in teacher training schools and as Block Education Officers will cause major shifts in the educational system. This unfounded fear is due to the erroneous attitude of those who came from secondary schools and have little understanding of the realities of primary work. A few arguments in favour of providing the career prospects outlined in the previous section are given below.

Multiplier Effect

The first argument is that no change in the existing administrative structure is contemplated. Only an improvement in the existing practice is suggested for obtaining a climate conducive to curriculum develpment at the primary school level. It is a matter of providing the openings to able teachers suitably qualified for taking up other jobs pertaining to primary education. Secondary school teachers who have keen interest in primary school children and who have the necessary qualifications and experience are not to be barred from staying in the posts they hold. If a higher diploma or degree were instituted at the State Institute of Education or the University, primary teachers could study the aspects of education relevant to their work and experience. The diploma qualification is seen as a means of allowing primary teachers to improve their status and of recognizing a period of extra study. Teachers having the diploma and sufficient experience should be considered qualified for entry to posts in Junior Basic Training Schools or for appointment as Block Education Officers. Secondary teachers should also be able to take up the diploma course if they wish to improve their qualifications and/ or to learn more about the education of younger children.

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* It may be noted that the situation has somewhat changed in Punjab since 1978 when the Primary Directorate was set up because some promotions were made on the basis of seniority alone but in disregard of merit, i.e. specialist qualifications for primary education. Some people call the decision a political blunder but others call it at the most an educational mistake because of the lack of necessary and sufficient educational preparation to meet the new educational challenges arising out as a consequence of the decision of setting up a separate school directorate of primary education.

The career openings which will improve the status of an individual primary teacher, will cause the better teachers to be lost from the schools. This argument can be countered on social grounds. The career prospects certainly provide a constant stimulus, necessary for improving upon the existing practices of teaching. Further, though the teacher will be lost to a particular primary school his experiences will be available for a larger section of the members of the community. The promoted teacher will either be helping to train fresh teachers in a Junior Basic Training School or giving valuable assistance to a large number of teachers as a Block Education Officer. His promotion will, thus, have a multiplier effect. As an experienced primary teacher but duly qualified for the post of, say, Block Education Officer, can positively provide professionally mature guidance to his fellow-teachers on educational problems. The guidance coming from a fellow-teacher is assuredly more convincing than that from a teacher-educator who has second-hand knowledge of teaching and methods of teaching in a primary school.

No Additional Cost

Certain incentives are necessary for able primary teachers, because there is no essential difference between primary school teaching and secondary school teaching. They are both important full-time demanding tasks. In fact, primary school work, being putting the children on the road to learning, is certainly harder than assisting them to move on the prepared ground. In view of the need for recognition of the professional teacher's pride and the value of his work, certain economic incentives are essential. The National Seminar on Primary Education (1961) recommended a selection grade for 25 per cent of teachers. Apart from creating a class among primary school teachers, which in socialistic democracy is, perhaps, not desirable, the provision of the selection grade involves an expenditure of huge additional sums of money. For a developing country money is a scarce commodity. The provision of openings for promotion in the existing educational system, will not impose any additional cost burden on the education department. This diploma course together with a change in selection procedures offers a means of improving the quality of primary level science education at minimal cost.

Further, no extra staff for introducing the diploma course for teachers will be required. The existing resources, for instance, the staff and equipment of the State Institute, can be used for inservice Primary diploma courses, which may be taken either full-or part-time. Primary teachers, who are studying for the diploma, may be given leave from school duty under rules.

Training Schools

A primary teacher, given the opportunity to serve in a Junior Basic Training School, would make the training of other teachers more realistic and less theoretical and divorced from classroom realities. Indeed, the provision will have a regenerative effect so that the training of primary teachers is likely to become progressively better.

Pre-service training schools and Institutes of Education would function as before. Their staff would be reinforced by persons having not only specialization in primary education but also concrete first-hand and fresh experience from primary schools. Consequent upon the improvement in the staff qualifications, the teacher training programe, both pre-service and inservice, would be considerably improved due to the constant feedback at all levels.

Happier and Competent Teachers

Besides the benefits of better teacher training and more sympathetic administration at the district and local level, the other advantages of providing better career opportunities for primary teachers would follow. These include a more integrated approach to education; greater potential possibilities of curriculum innovations; better textbooks written by teachers. Overall, these new conditions would produce teachers more satisfied with their jobs. The satisfaction of teachers is necessary to achieve more positive attitude to the better teaching of young children. A happier and thus a more dynamic teacher dedicated to his work, can bring about better results than a frustrated one who feels fixed in one career position like a wall-flower. Job satisfaction seems a first requisite for a teacher being competent in teaching and curriculum development.

Better Instructional Material

The books written by these experienced teachers, because they will contain practically tested ideas, are likely to be far more useful and relevant to the environment of the children, than any now available. Considering, for example, a textbook on primary science, we expect that a teacher from a rural school will be able to provide examples of how environment can be used for better science teaching. A principal of a college or other academic person is unlikely to have any relevant experience that he can include in the text. Second-hand knowledge that is gleaned from other books, is of little educational value for either children or teacher training.*

Sympathetic Administration

The problmes of primary teachers are likely to be appreciated and understood by those who have actually worked in primary schools. For instance, the problem of the replacement of items in the science kit, or the problem of securing the right type of materials in the library, or the problem concerning children's science activities can be explained easily to one who has had first-hand experience of the same difficulties.

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* Jointly with an officer of the Science Institute, this author has successfully completed a small project, funded by the UNICEF and the Consultancy provided by the NCERT in 1980. The purpose of the project was to produce four Primary Teacher Guides for Classes I and II (combined), III, IV, and V based on the idea of the use of environmental situations and local resources in tune with the spirit of the philosophy of the Science Education Project started in 1968 : 'Science is doing'. The unique value of the experiment is that by involving field primary teachers, district science supervisors, teacher-educators from the Junior Basic Training Schools, varieties of experiences were pooled in order to produce (later try out and modify, in the light of the experience gained) these four Teacher Guides for Primary Teachers. This experiment is an evidence of producing better instructional material, for better primary science teaching.

The administrator having relevant experience can create a better climate for the teaching of science. Even in the case of release of teachers for inservice courses, he can contribute better in the selection of teachers so that a fair chance is provided for everyone to get himself equipped with new techniques. The improvement of science education seems a direct function of the administrator's sensitiveness to the teacher's needs.

Practicability of the Idea

The question arises whether the idea of provision of a specialized diploma is practicable. It is certainly practicable, for no extra expenditure and no extra teaching staff will be required.

The content of the diploma course should be carefully chosen to suit the background knowledge and experience of primary teachers for whom it is intended. Primary school teachers have already studied the principles of education and the psychology of young children. The theoretical aspects of the diploma should extend his knowledge and understanding in these fields. Besides, the teacher had obtained experience in applying these principles in practice. This experience should be further developed by a study of modern teaching methods and refinement of basic techniques.

The whole diploma course organized as an extension of the basic teacher training course need last only for shorter time of one academic year.

The Punjab Education Department has very recently established three Inservice Training Centres and a separate directorate for School Education. Within the organization there seems a plenty of scope for primary teachers to contribute to the reconstruction of education. Extending career opportunities for primary school teachers is, thus, opportune at this time. The danger is that, being at the bottom level, due to the stratification, the potential of the primary school teacher may largely be left untapped. The need for career prospects may perhaps be better recognized and appreciated if his role in the new curriculum strategy and its effective implementation is properly understood.

Primary Teachers in UK and India

The brief account of stratification given above explains that in India the contact between the different categories of teachers is thin and distant. The gap between the different classes of teachers is not intentional but appears to happen incidentally. The consequences are not only to have harmful effects on the improvement of education but also injustice to primary school teachers. The conditions of service for Indian primary teachers are quite unlike those existing in the UK. Some of the primary school teachers in England hold Master's degree and yet are fully content to be serving in primary schools. These teachers are eligible for jobs in training colleges or Institutes of Education at the Universities. In India, each group works discretely bracketed or, in the words of N. K. Sanyal, 'in splendid isolation'. If the practice is modified in a way that can make the whole educational society realize the importance of primary school teaching, then the teacher's status is enhanced. The answer to the Indian problem lies in the recognition of, and provision for, better use of his valuable experience in a more befitting manner than hitherto has been done. As explained, several benefits are likely to accrue by exploring ways and means of providing specialized courses so that like the UK primary school teachers, the Indian teachers also feel proud of contributions to the cause of primary education.

Creative Child : Sikkimese Teachers' Perception

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CHILD is the product of his bio-social inheritance. With the booming bang of birth, the infant develops a style of life commensurate with the sanctioned norms of his culture. Creativity is culture-bound. A creative act in a culture, might well be non-creative in another culture. Either a culture chaperons creativity or belittles it. Hence, for being creative, predispositional influences include : (a) culture (Fabun, 1968; Teicher, 1973); (b) personality (Bloom, 1963; Golann 1963; Roe, 1951; Vinacke, 1952); and (c) motivation (Bloom, 1963; Guilford, 1967; Miller, 1909; Vinacke, 1952). For creative manifestation the child should experience stimulating encounters for the development of such behaviours in his culture. For the nurture of these behaviours, he should receive social reinforcement from the home, the peers, and the school. An open society not only accepts but also supports creative development of its people. An authoritarian and traditional culture, on the other hand, subverts it. Men with creative outlook are condemned and possession of such ideas is ridiculed.

School being the epitome of society, teacher-community is responsible for the augumentation of creativity in school children. But many researches have shown that teachers dislike the creative behaviours of children. Therefore, teachers' predilection seems to be a pre-condition for the development and nurture of creativity in children. The present investigation was aimed at finding an answer to the following questions :

1. How to Bhutiya and Nepali elementary and secondary school teachers of Sikkim perceive a creative child ?
2. Is there any difference in their perception and those of the 'creativity' experts ?

Procedure

A shortened version of 'Your Ideal Pupil' check-list developed by Torrance (1965) was used in the present investigation to collect data from the sample of the study. The original check-list consists of 62 characteristics and these were derived from over 50 research studies of highly creative and non-creative individuals of similar background and experience. The modified version of the check-list consists of 40 characteristics with the following distribution : (a) ten most and ten least valued characteristics selected by the experts on creative personality, (b) twenty most frequently selected characteristics as 'most and least valued' by the Ss of the previous studies by the author. Thus, 22 non-functional characteristics were dropped from the modifield version as used in the present study.

The validity of the shortented version of the check-list is supported by the fact that in the present study as also in others, the subjects almost chose the same characteristics as did the subjects of the studies by the author of the original check-list.

Subjects

The subjects of this study were Bhutiya and Nepali teachers serving in the elementary and secondary schools of Sikkim. Forty teachers of each ethnicity and category were requested to respond to the Ideal Pupil Check-list.

Scoring

The subjects were instructed to respond to the Ideal Pupil Check-list by putting A against ten characteristics, which they considered most important and would like to encourage them in their pupils. They were also asked to check another ten characteristics by putting B, which they considered should be discouraged or eradicated. Ranks were derived from the frequencies on 'desirable' and 'undesirable', characteristics.

Results

1. *Bhutiya Elementary School Teachers' Perception of the Creative Child*

Table 1 presents the rank order of the creative pupil characteristics which the

TABLE 1

Most Valued Traits of the Creative Pupil as Perceived by the Bhutiya Elementary and Secondary School Teachers and the Experts on Creative Personality

Experts on Creative Personality	*Bhutiya Elementary Teachers*	*Bhutiya Secondery Teachers*
	(N=40)	*(N=40)*
1. Courageous in convictions	Does work on time	Does work on time
2. Curious	Healthy	Competitive
3. Independent in thinking	Adventurous	Healthy
4. Independent in judgement	Always asking questions	Curious
5. Becomes pre-occupied with talks	Competitive	Independent in thinking
6. Intuitive	Independent in thinking	Self-confident
7. Unwilling to accept 'say-so'	Obedient	Industrious
8. Visionary	Sincere	Obedient
9. Willing to take risks	Curious	Receptive to ideas of others'
10. Always asking questions	Self-confident	Sincere

Bhutiya elementary school teachers and the experts on the creative personality consider most desirable. The most liked characteristics of "Always asking questions, Independent in thinking and Curious" are common to both the groups. For the least valued (Table 2), two characteristics chosen by these teachers agree with those chosen by the experts. They are : 'Fearfulness and Timidity'. Most of the characteristics chosen as least valued by these teachers show non-conforming tendencies in pupils, e.g. "Unwilling to accept ideas of others; Willing to take risks; Critical of others; Negativistic; and Disturbs class organization and procedure".

TABLE 2

Least Valued Traits of the Creative Pupils as Perceived by the Bhutiya Elementary and Secondary School Teachers and the Experts on Creative Personality

Experts on Creative Personality	*Bhutiya Elementary Teachers (N=40)*	*Bhutiya Secondary Teachers (N=40)*
1. Conformity	Distrubs class orgainzation and procedure	Negativistic
2. Willing to accept the judgement of others	Bashful	Disturbs class organization and procedure
3. Fearfulness	Negativistic	Bashful
4. Timidity	Talkative	Talkative
5. Obedience	Unwilling to accept others' ideas	Fault-finding
6. Courtesy	Fearfulness	Haughty and self-satisfied
7. Promptness in doing work	Timidity	Emotional
8. Socially well-adjusted	Critical of others	Timidity
9. Haughty and self-satisfied	Stubborn	Unwilling to accept others' ideas
10. Neatness and orderliness	Willing to take risks	Fearfulness

2. *Bhutiya Secondary School Teachers' Perception of the Creative Child*

Table 1 also presents the rank order of the creative pupil characteristics which the Bhutiya secondary school teachers and the experts on the creative personality consider most desirable. The most liked characteristics of 'Curiosity and Independent in thinking' are common to both the groups. For the least valued (Table 2), three characteristics chosen by these teachers agree with those chosen by the experts. They are : 'Haughty and self-satisfied; Timidity and Fearfulness'. Most of the characteristics chosen as least valued by these teachers show non-conforming tendencies in pupils, e.g. "Negativistic, Disturbs class organization and procedure; Fault-finding; and Unwilling to accept others' ideas".

3. *Nepali Elementary School Teachers' Perception of the Creative Child*

Table 3 shows the rank order of the creative pupil characteristics which the Nepali elementary school teachers and the experts on creative personality consider most desirable. The most liked characteristics of 'Always asking questions' and 'Curious' are common to both the groups. For the least valued (Table 4) three characteristics chosen

TABLE 3

Most Valued Traits of the Creative Pupils as Perceived by the Nepali Elementary and Secondary School Teachers and the Experts on Creative Personality

Experts on Creative Personality	*Nepali Elementary Teachers* (*N*=40)	*Nepali Secondary Teachers* (*N*=40)
1 Courageous in convictions	Obedient	Obedient
2. Curious	Competitive	Sincere
3. Independent in thinking	Does work on time	Does work on time
4. Independent in judgement	Healthy	Healthy
5. Becomes pre-occupied with tasks	Sincere	Curious
6. Intuitive	Always asking questions	Always asking questions
7. Unwilling to accept 'say-no'	Courteous	Adventurous
8. Visionary	Industrious	Neatness and Orderliness
9. Willing to take risks	Curious	Competitive
10. Always asking questions	Neatness and orderliness	Self-confident

TABLE 4

Least Valued Traits of the Creative Pupil as Perceived by the Nepali Elementary and Secondary School Teachers and the Experts on Creative Personality

Experts on Creative Personality	*Nepali Elementary Teachers* (*N*=40)	*Nepali Secondary Teachers* (*N*=40)
1. Conformity	Bashful	Talkative
2. Willing to accept the judgement of others	Disturbs class organisation and procedure	Bashful
3. Fearfulness	Timidity	Fearfulness
4. Obedience	Talkative	Likes to work alone
5. Courtesy	Critical of others	Timidity
6. Promptness in doing work	Stubborn	Stubborn
7. Socially well-adjusted	Fearfulness	Unwilling to accept others' ideas
8. Haughty and self-satisfied	Likes to work alone	Critical of others' ideas
9. Neatness and orderlines	Haughty and self-satisfied	Socially timid

by these teachers agree with those chosen by the experts. They are : "Timidity ; Fearfulness and Haughty and self-satisfied". Most of the characteristics chosen as least valued by these teachers show non-conforming tendencies in pupils, e.g. "Disturbs class organization and procedure; Negativistic; Critical of others; and likes to work alone".

4. *Nepali Secondary School Teachers' Perception of the Creative Child*

Table 3 also presents the rank order of the creative pupil characteristics which the Nepali secondary school teachers and the experts on the creative personality consider most desirable. The most liked characteristics of "Curiosity and Always asking questions" are common to both the groups. For the least valued (Table 4), two characteristics chosen by these teachers agree with those chosen by the experts. They are : "Fearfulness and Timidity". Most of the characteristics chosen as least valued by these teachers show non-conforming tendencies in pupils, e.g. "Talkative; Disturbs class organization and procedure; Likes to work alone; Unwilling to accept others' ideas; Critical of others; and Socially Timid".

Discussion

'Curious' as a creative pupil trait is supported by the elementary as well as the secondary school Bhutiya and Nepali teachers. This trait was also endorsed by the USA educators; the elementary and secondary school teachers of Berlin and India (Torrance, 1965); the science teachers of the UK (Wilkinson, 1972) and India (Raina, 1969); Pachaury, 1973); B.Ed. students (Tripathi, 1972); humanities teachers (Pachaury, 1975; Pachaury and Sharma 1978); and the Meitei and the Assamese elementary educators (Pachaury, 1984). It is evident that this trait seems to be the most pervading creative pupil characteristic across cultures held by different categories of teachers. Another trait, which is also commonly endorsed by different categories of teachers here and also abroad, is 'Independent in thinking'. In this study, too, the Bhutiya elementary and secondary school teachers endorsed this trait as the most liked trait of the creative pupil. 'Always asking questions' was yet another trait endorsed by the Bhutiya and Nepali elementary, and the Nepali secondary school teachers, while the teachers of the USA, the UK, Germany, and India did not report this characteristics as a creative pupil trait. However, it was supported by the prospective urdu secondary school teachers (Pachaury and Sharma, 1978); Hmar elementary and middle school headmasters and teachers (Pachaury, 1982a); Meitei elementary educators and Naga elementary school teachers (Pachaury, 1982b). Neither categories of Sikkimese teachers supported "Courageous in Convictions and Independent in Judgement" as creative pupil traits reported by other teachers (Table 5). It appears that Creative pupil traits have no social sanction in Bhutiya and Nepali cultures. Hence, the nurture of these traits by these teachers is ignored. To the extent the Bhutiya and Nepali teachers of this sample support two traits of the creative pupil, they compare very well with their peers in the country and also abroad. 'Always asking questions' as a trait of a creative pupil is not reported by the scientifically advanced cultures of the USA, and UK, and Germany (Torrance, 1965 and Wilkinson, 1972). The teachers of Greece and the Philippines did not support any of the characteristics of the creative pupil as agreed upon by the experts on the creative personality. It is obvious that the creative pupil perception of the Bhutiya and Nepali teachers of Sikkim is not

TABLE 5

Characteristics of the Creative Pupil Endorsed by the Different Cultural Groups

Category	*Characteristic (s) endorsed*	*Author (s)*
1. Educators of the USA	Curious Independent in thinking	Torrance (1965)
2. Elementary and Secondary School Teachers, Berlin, Germany	Curious Independent in thinking Independent in judgement	—do—
3. Teachers of Volos, Greece	None	—do—
4. Teachers in Training, Philippines	None	—do—
5. Elementary and Secondary School Teachers, Baroda, India	Curious	—do—
6. Science Teachers, UK	Curious Independent in thinking	Wilkinson (1972)
7. Science Teachers, Ajmer, India	Curious Independent in thinking	Raina (1969)
8. B. Ed. Students, Bhopal, India	Curious Independent in thinking	Tripathi (1972)
Indian Psychologists	—do—	—do—
9. Science Student-Teachers, RCE, Mysore, India	Curious Independent in thinking Courageous in convictions	Pachaury (1973)
10. 4-year Humanities Teachers, RCE, Mysore, India	Courageous in convictions Curious Independent in thinking Independent in judgement	Pachuary (1975)
11. Pre-service Language Teachers, RCE, Ajmer, India		
(a) Hindi	Independent in judgement	
(b) English	Independent in thinking	
(c) Urdu	Curious Independent in thinking Independent in judgement Always asking questions	Pachaury and Sharma (1978)
12. Hmar Elementary and Middle School (Headmaster) Imphal, India	Always asking questions	Pachaury (1982 a)
13. Hmar Elementary and Middle School (Teachers) Imphal, India	Always asking questions	—do—
14 Meitei Elementary Educators, Imphal, India	Always asking questions Curious	—do—

15. Meitei Secondary School teachers, Imphal, India	Independent in thinking Independent in judgement	Pachaury (1982 a)
16. Non-Naga School Teachers service in Nagaland, India	Independent in thinking Independent in judgement	Pachaury (1982 b)
17. Angami Naga Elementary School Teachers, Nagaland, India	Always asking questions	Pachuary (1982 b)
18. Elementary Educators, India	Curious Independent in thinking	Pachuary (1984)

very different from the others. After all what else is expected of such teachers who has been living a simple life, not much influenced by the scientific advances of the plains. These teachers' support of "Curious, Independent in thinking, and Always asking questions" (so do Naga teachers Pachaury, 1982a) as creative pupil traits and nurture of these traits in their children and youth, deserves appreciation. For the development of the other creative traits, inservice programmes should be organized so as to acquaint these teachers with the views of the experts on creative personality and educate them for the nurture of these traits in the Sikimese children.

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Meta-analysis : Quantitative Approaches in Review of Research Findings

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Review of related literature has been a routine step along the way to presenting a research study, or laying the foundation for an innovative practice in a field such as education. The research reports show that literature reviews have been narrative in nature. If some researchers find it suitable to faithfully present the findings from previous research studies and burden the reader with the task of making his/her own conclusions, others choose a procedure called 'vote counting'. Under this procedure, a reviewer makes a simple tally of positive, negative, and neutral findings about the relationship, innovation or treatment under consideration and selects the finding with a maximum number of tallies as the general finding. This is precisely the way one finds the 'mode' of a distribution.

Social and behavioural research is a large and widely scattered enterprise. The number of research studies have been increasing by leaps and bounds. A reviewer, who does not have tools to extract and summarise information from research reports should possess extra-ordinary ability to comprehend, classify, analyse, and integrate multiple relationships among different variables. Size of the literature being reviewed is an important factor that affects narrative reviews. A narrative reviewer would probably do his job fairly well if he has to deal with a dozen or so studies on a topic. Unfortunately, unless one adopts extremely stringent criteria for selecting the studies, almost every area of research has swollen with findings. Moreover critics of narrative reviews (Hedges and Olkin, 1980; Light and Pilmer, 1982; Glass, McGraw and Smith, 1981; Light and Smith, 1971; Jackson, 1978; etc.) have identified several weaknesses based on the unsystematic nature of narative reviews. Some of them are described below.

First, narrative reviews often make no attempt at rigorous definition and standardization of techniques. Obviously, different reviewers see things differently. The conception of research review and integration that prevails in social and behavioural sciences is one in which the activity is viewed as a matter of largely private judgement, individual creativity, and personal style (Jackson, 1978). To a certain degree, they are surely important in review. But, only these can hardly make the activity a scientific one. Since reviewers report very little about their methods of reviewing, the reader cannot really judge the validity of the conclusions.

Second, the narrative review tends to become inefficient as the quantum of resesarch literature to be reviewed tends to increase. Whatever be the wonderful deed it can perform, the human intellect has its limitations as well. The view of Light and Smith (1971) on this issue is more critical. According to them, 'little headway can be made by pooling the words in the conclusions of a set of studies. Rather, progress will only come when we are able to pool, in a systematic manner, the original data from the studies'.

Third, since the narrative review has few formal rules, thereby making it subjective, disagreements are common regarding the selection of studies for review and conclusions drawn. Miller (1977) who conducted a study of three narrative reviews, completed within a span of five years, based on largely the same literature found that they reached different conclusions regarding the relative efficacy of therapeutic treatments. If Uhlenhuth, et. al. (1969) concluded that the 'existing studies by no means permit firm conclusions as to the nature of the interaction between combined psychotherapy and medication'. May (1971) concluded that 'there is little difference between psychotherapy plus drug and drug therapy alone', and Luborsky (1975) concluded that 'the advantage of combined treatment is striking'. Such disparities tend to be more acute if the topic of review is a controversial one. Under similar circumstances of conflicting conclusions by reviewers on the relative influence of heredity and environment on intelligence, Kamin (1978) concludes that 'perhaps the major point to be made is that readers interested in evaluating the evidence on hereditability of I.Q. ought not to depend on published summaries. Those who wish to speak or to teach accurately about what is and is not known have no realistic alternative but to read the literature themselves'.

Apart from the above three, there have been other criticisms, like the magnitude of relationships, mean differences, etc., not taken into account in narrative reviews, and their ignoring of the fact that random sampling error can play a part in creating variable findings among studies. If Kamin's (1978) statement is taken seriously, one has to eliminate the review as a scientific or practical tool. Under such circumstances, attempts were made to develop systematic procedures for summarising large number of studies.

Quantitative Approaches to Review

In a bid to overcome the deficiencies of the narrative procedure, researchers have developed quantitative techniques for review. Mosteller and Bush (1954) were among the first to develop useful statistical procedures for research synthesis. During the last decade, there have been many additional methodological developments (Rosenthal, 1978; Glass, McGraw and Smith, 1981; Pilmer and Light, 1980; etc.). The emphasis in most of them has been to come out with an 'overall average conclusion' from a group of studies. The overall average conclusion is arrived at through one of the two procedures, viz., conducting a combined significance test, and computing an average effect size.

Under the procedure of combined significance test, a secondary analysis is conducted by pooling the data from all the studies being reviewed and statistically testing the common null hypothesis. Several statistical techniques to accomplish this objective have been described by Rosenthal (1978). The main advantage of these combined significance tests is that the sample size for the grand comparison is much larger than that for each individual study, and so the power of these tests is much higher.

The second way of summarising the findings of a group of studies is to compute an effect size for each study and then to average the results across the entire set. This technique has been pioneered by Gene Glass (1977), who coined the term 'meta-anlaysis', that is now used to describe a quantitative literature review. In short, meta-analysis means the analysis of analyses, i.e., the statistical analysis of the findings of many individual analyses (Glass, et. al; 1981). Thus, meta-analysis is an application of the attitude of data analysis to quantitative summaries of individual studies.

Conducting Meta-analysis

The entire procedure of conducting a meta-analysis can be seen as consisting of four major phases. They are :

1. Finding Studies
2. Describing, Classifying, and Coding Studies
3. Measuring Study Findings
4. Analysis of Study Findings

Chronologically, each of these phases has been described in the following paragraphs.

1. *Finding Studies*

Be it narrative or quantitative, a review should have a data base. In social and behavioural research, the data base for conducting meta-analysis is often a widely scattered collection of articles, theses, project reports, etc. As the data are not available readily and in an up-to-date fashion for a reviewer, the work of a meta-analyst begins with finding research studies for review. Though the data base is a widely scattered one, the search of a meta-analyst is not an arbitrary one because he would have some guidelines to go about finding studies. The first guideline, for deciding which study is relevant and which is not, comes from the hypothesis being tested by a meta-analyst. Thus, a review on the relative effectiveness of the programmed learning method and the method of lecturing can refuse to consider all those studies where programmed learning has not been used.

Even though a reviewer knows and can decide the suitability of including a study for review, it often happens that a few studies relevant for a review may remain untouched. This, however, need not reflect upon the sincerity of a reviewer. This only can mean that many a studies remain unpublished and/or all the published studies are not accessible to a reviewer. Whatever be the reason for incompleteness, like an unrepresentative sample tends to be called a biased sample, the review based on the incomplete number of studies can lead to erroneous conclusions. However, since this would remain a problem till all researches get published and all published researches are accessible, a protection against a probable bias is a thorough description of the procedures used to locate the studies so that the reader can make an assessment of the representativeness and completeness of the data base for meta-analysis.

The data base consists of literature available from two types of sources: primary and secondary. The literature from the primary source consists of full-length reports by the researchers themselves and that in the secondary source are reviews, abstracts, and surveys. Of the two sources, it is the studies under the primary source that usually remain uncovered. The reason being inefficient documentation, storage, and retrieval systems. However, secondary sources like bibliographies can be of much help in identification of the primary sources. From the point of view of validity, the meta-analyst should take precautions against bias and should ensure that the meta-analysis does not suffer from any sort of arbitrariness.

2. *Describing, Classifying, and Coding Research Studies*

In phase one, the studies were located based on the variables included in a meta-analysis. In the second phase, viz., describing, classifying and coding research studies, the meta-analyst seeks to identify the characteristic properties of the research studies. His concern here is to relate the properties of the study with the study findings. Any study would consist of two sets of charcteristics that are important for meta-analysis. They are substantive characteristics and methodological characteristics. Substantive characteristics are those characteristics of studies that are specific to the problem studied. For example, in a meta-analysis of the effect of instruction on achievement the substantive characteristics might include (i) the type of instructional treatment, (ii) duration of the treatment, (iii) age of the students (iv) if more than one method of instruction is used, the sequence of methods, etc. On the other hand, the methodological characteristics of studies are more general. They may be nearly the same for all meta-analysis of a general type, such as experimental studies, correlational studies, or surveys. The methodological characteristics would include (i) sample size, (ii) randomisation / matching / non-equivalent groups, (iii) test reliability (iv) degree of loss due to drop-out of subjects, (v) experimental design, etc. Hence, describing the studies is nothing but describing the substantive and methodological characteristics of studies. A care that a meta-analyst would take while describing studies is to cover the characteristics as exhaustively as possible so that the context in which the findings were arrived at can be examined closely. The importance of describing the characteristics lies in the fact, on occassions, meta-analysis can answer even those questions which an individual study may not be able to answer. For example, a study of the comparative effectiveness of two methods of instruction may not be able to test the hypothesis whether the two methods have differential effectiveness for different school related subjects. In fact, taking a school related subject for the study of comparative effectiveness is usually an incidental necessity. Whereas, if a meta-analyst finds that the two methods have been used to teach different subjects, he may venture to test the hypothesis of differential effectiveness. Similarly, it can be studied whether the two methods have differential effectiveness for different age and grade levels.

Based on their description, studies are classified under different groups. The criteria for classificiation are the study characteristics. Classification of studies in meta-analysis can be compared to the procedure of stratified sampling. Like the subjects in a stratum have a common characteristic, the studies under a class share a common characteristic. Hence, studies under one class would be homogeneous in terms of a given characteristic. Thus, classified studies are coded and tabulated in the form of a matrix of studies versus characteristics.

A problem that concerns a meta-analyst during this phase is that of validity. Depending upon the source from which the studies are collected, one may find inadequacy in reported information and thereby forcing him to make inferences regarding study characteristics. When there are several persons involved in describing, classifying, and coding, there is every likelihood of disagreements. So, a safeguard against such an error is to have as few coders as possible. Moreover, it would be worth the effort if the coded studies along with their descriptions are presented to a few judges for their opinion.

3. *Measuring Study Findings*

All quantitative, empirical studies aim to assess some particular phenomenon. If experimental studies aim to assess the effect of an independent variable on some dependent variable, correlational studies are interested in the strength and direction of relationship between variables, and surveys are aiming at the rate of incidence figures such as percentage of adults opting for adult education in a given community. Meta-analysis aims at the statistical integration of empirical studies of a common phenomenon. In meta-analysis, the substantive and methodological characteristics of the studies discussed earlier constitute the independent variables and the dependent variable is the finding of the studies. For such a view to be true, the findings of all the studies must be expressed on some common scale. Such a conversion, however, may not be essential in all meta-analysis because study findings can be expressed directly in cases where a simple statistical expression of results is common to all studies. It is in this phase of measuring study findings that the meta-analyst does the work of providing a common scale to the findings from different studies.

If one wants to compare the scores obtained by individuals on two different tests, he cannot do so from the raw data because the two distributions will have different means and standard deviations. A statistical alternative for comparing scores in such a situation is to convert the scores into what are known as derived scores. A usual procedure is to compute the Z-scores in which the raw scores are expressed in standard deviation units. The attempt of providing a common scale to the findings from different studies is done in a manner very similar to that of finding Z-score equivalents. The resultant of such a conversion is called 'Effect Size' and is denoted by the letter 'Δ_{E-C}', the standardised mean difference for describing experimental effects. The effect size for experiments where outcomes are measured in dichotomies, like dropped out versus persisted in schools, passed versus failed on a test, succeeded on a conservation of area tasks or not succeeded, is expressed as 'Δ'. In the meta-analysis of correlational studies, all the correlation coefficients are converted to one common scale, i. e. Person's Product Moment Correlations.

Standardised Mean Differences : 'Δ_{E-C}' a measure of experimental effect size is given by the formula : mean difference between the experimental and control groups divided by within group standard deviation.

i. e. $\Delta_{E-C}=(\bar{X}_E-X_C)/Sx$

Since there are more than one standard deviation in an experiment, the choice of the standard deviation with which to scale the differences between group means to determine Δ_{E-C} is crucial. Theoretically speaking, the measure of experimental effect could be calculated by use of the standard deviation of the experimental group (S_E), or the standard deviation of the control group (S_C), or some combination of the two like average standard deviation ($S_E+S_C/2$).

The average standard deviation is statistically unsound and as Glass, et. al. (1981) have said, 'probably (it) should be eliminated as a mere mindless statistical reaction to a perplexing choice'. But both the remaining alternatives hold true for an experimental study with one experimental and one control group, because they are two distinct features of a finding which cannot be expressed by one number. However, the problem arises when there are more than one experimental group in a study. For example, suppose that method A, B, and Control are compared in an experimental study, with the following results :

	Method–A	Method–B	Control
Means	50	50	48
Standard Deviations	10	1	4

If effect sizes are calculated using the standard deviations of the method, then Δ_{A-C} equals .20 and Δ_{B-C} equals 2.00—a misleading difference, considering the equality of the method means on the dependent variable. Standardisation of mean differences by the control group standard deviation has an advantage of assigning equal effect sizes to equal means. Hence, by and large, in meta-analysis of experimental studies, the mean differences are standardised using control group standard deviation for S_X.

Since the effect size is expressed in standard deviation units. in an experimental study of treatment versus control if 'Δ_{E-C}' is found to be +1, it would mean that the average performance in the experimental group is one standard deviation above the average performance in the control group. Assuming normality, only 16 per cent of the subjects in the control group would have performed better than the average performance of the treatment group. Expressing effect size in terms of percentile, a 'Δ_{E-C}' of +1.00 would mean that the average person in the experimental group has a score that exceeds 84 per cent of the persons' scores in the control group. While interpreting the effect size, though normality is a convenient assumption in many instances, the fact remains that it is an assumption that may occasionally be false. Another important caution while interpreting effect size arises from the possibility of attempting to associate regions of the effect size metric with descriptive adjectives like 'small', 'moderate', 'large', etc. Depending upon the context, an effect size of 2.00 might be poor and that of '1' might be fairly large. One should remember that after decades of confusion the researchers have stopped speaking about the regions of the correlation coefficient scale as low, medium, or high.

A meta-analyst's job will be simplified considerably if all experiments were of one-treatment-one-control-group type. The reality being different, a meta-analyst comes across different types of reports from which he has to extract the data required by him in the form of effect size. There may be studies that lack control groups and studies where there is no common control condition. Many research reports may be such that they report only the inferential statistic 't' and do not contain means and standard deviations. Certain reports may contain only significance levels, while certain other might have used non-parametric statistics. Also, there would be experimental comparisons that use more complex designs than the simple comparison of two groups, like factorial designs with analysis of variance. From all these and many more different routes a meta-analyst is able to reach his goal of measuring the effect size. Taking each of these conditions into consideration, Glass, et. al. (1981) have presented suitable statistical procedures to extract data from research studies for meta-analysis.

4. *Analysis of Study Findings*

Having measured the study findings, a meta-analyst analyses the measured finding so that the purpose of meta-analysis is accomplished. As Glass, et. al. (1981) have put it, 'the analysis of data in a meta-analysis is properly approached as an instance of muitivariate data analysis in which the studies are the units on which measurements are taken and the study characteristics and findings are the many variables. Any of the methods of statistical analysis such as univariate description, frequency tabulations, correlations, regression analysis, factor analysis, analysis of covariance, etc., that have proved to be useful in extracting meaning from data are potentially useful in meta-analysis. However, while using these techniques of analysis, the attitued of meta-analysts may differ from one another. It matters least whether one's attitude is exploratory or conformatory, descriptive or inferential.

As said earlier, after measuring the findings of studies (by means of an effect size, a correlation coefficient, etc.), all the standard methods of tabulating and describing statistics may be usefully applied in a meta-analysis. An instance of such an analysis comes from the meta-analysis conducted by El-Nemr (1979) on the comparative effectiveness of traditional teaching of biology and biology taught as a process of inquiry. Nearly 250 effect size measures from 59 experimental studies were classified in seven categories descriptive of type of outcome, science achievement, science process skills, critical thinking skills, laboratory skills, attitudes toward the biology course, interest in science, and composite measure. El-Nemr analysed the findings using measures of central tendency and variability. Another instance of using descriptive statistics for analysis in meta-analysis comes from Hartley's (1977) study, where she compared computer assisted instruction, tutoring, individualised learning packets, and programmed instruction with control group.

Analysis of measured study findings may also be done in terms of the study of relationship of study characteristics and findings in order to answer questions such as 'whether the findings are homogeneous for all types of subjects or whether they are positive for some and negative for others'. Any of the statistical techniques for studying the association or relationship between two variables, like contingency table analysis, regression analysis, correlation analysis with its many subspicies, may find useful application. An illustration of meta-analysis using correlational techniques is Smith and Glass's (1977) study of the effects of psychotherapy.

The procedural details of meta-analysis as have been presented in the foregoing paragraphs, though exhaustive for a paper of this sort, may not answer several questions and apprehensions one has about this relatively new perspective of research review. Probably individual attempts at understanding meta-analysis seems to be the most suitable suggestion that can be made here. However, a few apprehensions of researchers expressed as criticisms have been discussed hereunder.

1. The meta-analysis approach to research review mixes and compares studies with different characteristics. It makes no sense to integrate the findings of different studies.

Critics of meta-analysis have felt that meta-analysis forces dissimilar studies together, it tries to make different studies answer the same question, or is like mixing oranges and apples. This would mean that in order for any two studies to be integrated they should be 'same' in certain respects. A question that naturally occurs to one's mind is when do we say that any two studies are same or can we define the 'sameness' expected of studies so that they can be integrated. Moreover, there seems to be a contradiction in such a stand because if the studies are same in all respects, then where is the need for integrating them. In other words, studies which need to be compared or integrated are not 'same' studies but 'different' studies. Supposing a researcher wishes to integrate existing studies on programmed learning and structured lecturing to get some notion of their relative effectiveness, studies that have used different achievement tests should cause little concern to him considering the basic similarity of achievement tests. If this is objectionable, one should ask whether, he will accept as comparable two studies using 'different' forms of the 'same' test or whether he will accept as equal two average scores which were achieved by 'different' patterns of item responses to the 'same' form of the 'same' test (Glass, et. al. 1981). If analysed further, such an objection should also be applicable to any form of statistics used in research where performances, responses, etc., of different persons are pooled together and analysed. It can be argued that these persons are as different and as much like apples and oranges.

2. Meta-analysis accepts uncritically the findings from studies that are poorly designed or are otherwise of low quality, thereby it advocates low standards of quality for research.

In essense, the above criticism amounts to saying that meta-analysis should be selective in choosing studies for integration. It should be said at the outset that no researcher would like to conduct a study that is deficient in some aspect of measurement or analysis. For whatever reason a study is found to be less-than-perfect, the reasons are extraneous rather than intentional. The proponents of meta-analysis have tried to deal with the above criticism by highlighting two procedural measures. One, if a study is found to be extremely imperfect on criteria like (i) lack of operational measures, (ii) relevance of research design, (iii) adequacy of evidence in relation to conclusions, etc., the study is discounted or eleminated completely from consideration. The concern for exhaustive coverage, in any case, cannot compel a researcher. Two, care can be taken during analysis, if the meta-analyst has reasons to believe that the study quality might have confounded their findings, to separate the good and bad studies on the same sound criteria and taking quality as a characteristic he may conduct correlational or covariance analysis to know whether good and bad studies really make different conclusions about the variables being studied. Thus, the question of influence of study quality and findings in meta-analysis is considered as an empirical a posteriori question and not a priori matter of opinion or judgement used in excluding studies from consideration. If the empirical evidences derived show a significant influence of quality on findings, the meta-analyst would consider only good studies. If this is not the case, then the meta-analyst would prefer a larger data base to a small data base.

3. Meta-analysis integrates non-independent data and hence gives one a mistaken impression of the reliability of the results.

Meta-analysis are conducted on large data sets in which multiple results are derived from the same study. The principle implication of this, according to critics, is a reduction in the reliability of estimation of average or of regression equations. For example, if one study gave effects, .2, .2, .2, and .2 and another gave effects, .6, .6, and .6, one would have little reason to believe that he had been informed seven times about the aggregate result in question; rather the true degrees of freedom would be 2, the number of studies, than 7, the number of effects. Glass, et. al. (1981) tend to accept the criticism as sound. A facile solution to this problem of non-independence would be to average all findings within a study and proceed with meta-analysis, taking 'studies' as the unit of analysis. Though this solution seems to be satisfactory in certain instances, it is likely to obscure many important questions that can only be addressed at the 'within study' level of outcome variables.

Conclusion

As has been pointed out earlier, the approach to research integration referred to as meta-analysis is nothing more than the attitude of data analysis applied to quantitative summaries of individual studies. It is a perspective that finds its roots in the techniques of measurement and statistical analysis. Hence, in order that meta-analysis could be applied to research integration, the data called-out from research studies should be quantitative or quantifiable. An exception to this is the case when research studies are conducted with a theoretical premise that do not encourage statistical analysis of the data even when they are quantifiable. To illustrate this point, traditional Piagetian studies stress more on the description of observations made at the unit-level than making observations based on the aggregated group data. Here is an instance where narration is preferrable to numeration. Also, in a given area of research, when there are a handful of findings pertaining to a phenomenon, the narrative approach to research integration may by more appropriate than the quanitative approach. This is because of the concern of a reviewer to describe the phenomenon under study than arrive at stable generalisations, which seems to be the main concern of meta-analysis. By providing a methodology to integrate research findings to arrive a stable generalisations, meta-analysis contributes a great deal to evolving a theoretical scheme regarding a given phenomenon. In otherwords, by contributing to the process of arriving at generalisations based on empirical evidence, meta-analysis contributes to theory-building. However, the use of meta-analysis for review has been scarce and with greater exposure researchers may adopt this methodology for integrating the research evidences accumulated by them. Probably this could be one such exposure of the methodology of meta-analysis to those researchers who may further explore and practice to know its full potential.

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Comprehensive Evaluation of Curricula : A Model

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SINCE curriculum evaluation is a new venture in this country, there is need for developing a rationale on the basis of which a model for curriculum evaluation may be worked out. For such a rationale certain assumptions have to be made and their implications traced out for evaluation of curricula. Based on this, different components of evaluation can be identified and a mode of evaluation of those components can be determined.

Basic Decisions

A model is a mental construct that tries to explain the interaction of the components constituting the nucleus of a framework developed on the basis of certain assumptions embeded in a particular paradigm. When applied to a curriculum evaluation project, it aims at discovering the basic assumptions relating to the phenomenon, identifying the key components of evaluation, interaction of the components and other variables and application of the findings to new situations in the form of new hypotheses. There are, however, a number of parameters that have direct bearing on the development of a model. These are :

(a) Concept of the Curriculum—Nature and Scope
(b) Curriculum Development Strategy—Centralized/Decentralized
(c) Concept of Evaluation—Nature and Mode
(d) Aim of Appraisal—Improvement or Measurement
(e) Focus of Evaluation—Goal, Judgement, Decision, etc.
(f) Level of Evaluation—Macro/Micro, Partial/Full Programme

(g) Preferred Evidence—Personnel Tools and Techniques
(h) Judgemental Mode—Norm Referenced/ Criterion Referenced

Decisions on all these basic issues have to be taken. Since a model depends on certain assumptions, it is necessary that, first of all, a case may be made regarding all the above-mentioned facets of the rationale, keeping in view the intentions of the curriculum developers and the curriculum materials produced as a sequal to the curriculum development project. It is quite common that the strategy of curriculum development is generally a centralized process in this country. The curriculum development activity is usually comprehensive to include curriculum objectives, curriculum content (syllabi), and teaching-learning materials. As such, the curriculum evaluation model must be comprehensive enough to cover all these aspects. As selection of curriculum materials is not the purpose in the present context, the model should cater to the improvement of the curriculum materials. As for the focus of evaluation, we are not concerned with decisions as to the continuation or termination of a project, so we cannot adopt any decision-facilitation model. Likewise, when the objective of evaluating a project is not to select a curriculum out of the given ones or to compare the end-products of a curriculum with the same existing curricula but we are interested in improvement of the existing curricula, a judgemental model for evaluating the curricula cannot be used. We are concerned more with the curriculum goals and the intentions which formed the basis of most of the curriculum development projects. As such, an attempt is made to develop a model on the lines of goal-attainment models. Evaluation will be at the macro level, covering the whole range of activities rather than a partial programme. From the point of view of collecting evidences, importance will be given not only to the tools and techniques of data collection but also to the persons who use these techniques. Therefore, judgement-based and observational data will find a more prominent place than psychometric data in this approach. Judgements to be made would weigh more heavily towards criterion-referencing than towards norm-referencing. Efforts will be made to strike a balance between the norm-referenced and the criterion-referenced judgements. For appraisal of a curriculum and curriculum materials, all the three types of evaluation—reflective, formative, and summative—will be employed. Depending upon the aspects of evaluation, relative importance to the three modes of evaluation will be decided. Thus, the model being proposed here would try to focus on the adequacies and inadequacies in the process of curriculum development in its own setting.

Assumptions of the Model

The assumptions of the model that follow are made regarding the following aspects :

(a) Place of evaluation in the curriculum development project.
(b) Philosophy underlying the project.
(c) Role of personnel vis-a-vis instruments of evaluation.
(d) Collection of evidences.
(e) Analysis and interpretation of evidences.
(f) Methodology of forming judgements and decision-taking.

ASSUMPTION 1

Systematic evaluation at every stage of curriculum development provides quality control for curriculum.

Implications for Evaluation

(a) To what extent evaluation is used as an integral part of the curriculum development process?

(b) To what extent the evidence resulting from inbuilt evaluation is used as feedback?

(c) To what extent the emphasis on reflective, formative, and summative evaluation is given at the various stages of curriculum development?

ASSUMPTION 2

If the philosophy underlying a project is made explicit in terms of clearly formulated objectives at the planning stage, it provides the needed direction and the basis for evaluation of the process and product of curriculum development.

Implications for Evaluation

(a) To what extent the objectives (if stated) in a subject are comprehensive enough to cover pupils' learning and are stated in terms of testable intended outcome of learning?

(b) To what extent the curriculum materials produced are in accordance with the instructional objectives?

(c) To what extent students' learning is assessed in terms of the instructional objectives?

ASSUMPTION 3

If the antecedents and setting of a curriculum project which condition the end-products of the curriculum project are known and taken into account, it facilitates making of judgements in its own context.

ASSUMPTION 4

If opinions and judgements of people (developers, practitioners, consumers) who use various tools and techniques of data collection, are given more weightage than the data that accrue from the pychometric methods, we are likely to have more valid judgements about the process and product of curriculum development.

Implications for Evaluation

(a) Use of the system analysis approach.

(b) De-emphasis on the psychometric approach.

(c) Collection of observational and descriptive data.

ASSUMPTION 5

The more the quality and quantity of inputs in a project, the better would be the end-products of curriculum and its impact.

Implications for Evaluation

(a) Adequacy of inputs/resources employed.

(b) Effective utilization of the resources.

(c) Appraisal of the inputs.

ASSUMPTION 6

In a given setting, the inputs remaining the same, the output or product of curriculum will be directly proportional to the effectiveness of the strategy and the logistics used for curriculum development.

Implications for Evaluation

(a) Delineation of the process aspects of evaluation.

(b) Appraisal of process characteristics.

(c) Use of a relevant mode of evaluation (Reflective/formative/summative).

ASSUMPTION 7

The end-products of curriculum and its impact depend upon the extent to which proper interaction among context, inputs and process is ensured during the development of curriculum.

Implications for Evaluation

(a) Taking cognizance of the context, inputs and process of curriculum development.

(b) Appraisal of the products of curriculum.

(c) Assessment of the impact of curriculum in the field.

ASSUMPTION 8

The more comprehensive data we have from different sources by different people at various stages of curriculum development, the more valid and reliable judgements we are likely to make.

Implications for Evaluation

(a) Collection of evidences from various sources (students, teachers, developers).

(b) Use of a variety of tools and techniques (testing, observation, inquiry, analysis, etc.).

(c) Gathering of evidence at various stages of curriculum development.

(d) Interpretation of evidences in terms of context, inputs and process characteristics of the project.

From the above-mentioned assumptions and the corresponding implications for evaluation, we are not in a position to identify the various components (entity) to be evaluated.

Components of Evaluation

For comprehensive evaluation, various types of components can be identified and specified under the following headings which, indeed, represent the three facets of curriculum evaluation.

(a) Aspects of evaluation (what to evaluate).
(b) Stages of evaluation (when to evaluate).
(c) Mode of evaluation (How to evaluate).

These three facets can be further specified, as below, to indicate their nature and scope for evaluation process.

ASPECTS OF EVALUATION

1.0 Setting

1.1 *Social Context*

(a) Community acceptance
(b) Community support
(c) Community resources
(d) Community participation
(e) Community attitudes
(f) Community resources, etc.

1.2 *Educational Context*

(a) Administrative support
(b) National goals
(c) Educational objectives
(d) Curricula of related classes, etc.

1.3 *School Context*

(a) School plant
(b) Equipment, services, and facilities

(c) Instructional objectives
(d) Curricula of various subjects
(e) Students' intake
(f) Teachers' strength, etc.

1.4 *Resource Context*

(a) Financial support
(b) Manpower support
(c) Natural resources
(d) Man-made resources (industry, etc.)

2.0 Inputs

2.1 *Students' Input*

(a) Strength of students
(b) Quality of students
(c) Learning environment
(d) Home background
(e) Socio-economic status, etc.

2.2 *Teachers' Input*

(a) Strength of teachers
(b) Competence of teachers
(c) Attitudes of teachers
(d) Work-load of teachers, etc.

2.3 *Financial Input*

(a) Project budget
(b) Staff salaries
(c) Financial motivations to personnel involved, etc.

2.4 *Additional Resource Inputs*

(a) Governmental support
(b) Private agencies' support
(c) Community's social support
(d) Free services offered, etc.

3.0 Process

3.1 *Role of Personnel*

(a) Developers
(b) Teachers
(c) Students
(d) Administrators
(e) Supervisors
(f) Community members, etc.

3.2 *Strategies Adopted*

(a) Curriculum strategies
(b) Innovative strategies
(c) Logistics
(d) Approaches

3.3 *Activities Followed*

(a) Teaching styles
(b) Classroom organization
(c) Teacher-pupil interaction
(d) Observation of teaching-learning process, etc.

3.4 *Formative Evaluation*

(a) Timing of evaluation
(b) Data sources used
(c) Nature of data collected
(d) Mode of data collection
(e) Feedback of data

3.5 *Utilization of Resources*

(a) Material resources
(b) Financial resources
(c) Human resources
(d) Time, etc.

4.0 Product

4.1 *Students' Growth*

(a) Cognitive development
(b) Affective development
(c) Psychomotor development

4.2 *Quality of Materials*

(a) Relevance to the requirements of discipline
(b) Meeting the needs of the learners
(c) Usability in teaching-learning situation

4.3 *Staff Development*

(a) Teachers' competence improved
(b) Change in the attitudes of teachers
(c) Curriculum developers' growth
(d) Students' interests developed

5.0 Impact

5.1 *Effect on Personnel Involved*

(a) Change in the attitudes and interests of teachers
(b) Change in the students' interests and attitudes
(c) Change in the attitudes of parents
(d) Change in the outlook of administrators, supervisors, etc.

5.2 *Reaction of Community*

(a) Extent of acceptability of curriculum in the community
(b) Additional support promised
(c) Encouragement and rewards given
(d) Increased involvement and participation.

5.3 *Change in School Practices*

(a) Improvement in human relationships
(b) Adoption of new methods of teaching
(c) Use of new devices for assessment of students
(d) Modifications in the pattern of school organization, etc.

5.4 *Improvement in Examination System*

(a) Changes in classroom testing procedures
(b) Changes in the institutional evaluation system
(c) Changes in public examinations
(d) Use of a wider variety of tools and techniques
(e) Use of evaluation as a feedback device

5.5 *Unintended Outcomes*

(a) Collateral effects
(b) Intangible outcomes
(c) Emergent outcomes
(d) Psychological effects, etc.

Stages of Evaluation

At each stage of curriculum development, the componentes of evaluation are listed, followed by identification of the elements relevant to each component which form the basis of appraisal.

1.0 Planning Phase

1.1 *Formulation of Project Objectives*

(a) Adequacy of financial resources
(b) Constraints and limitations
(c) Relevance of project objectives to national goals
(d) Suitability of objectives stated

(e) Specifications listed as intended outcomes of learning
(f) Staff requirement, etc.

1.2 *Programme Budgeting*

(a) Task areas identified
(b) Operational strategies to be used
(c) Activities of the curriculum delineated
(d) Time-tabling and time-targeting of activities

1.3 *Administrative Organization*

(a) Financial resources allocated
(b) Staff requirement
(c) Logistics of the reform visualized
(d) Monitoring and coordinating roles
(e) Feedback mechanism to be undertaken

2.0 Development Phase

2.1 *Formulation of Instructional Objectives (subject-wise)*

(a) Relevance to the national objectives
(b) Relevance to the requirements of a discipline
(c) Comprehensiveness—cognitive, affective, and psychmotor domain
(d) Attainability of the objectives
(e) Statement and specification of objectives.

2.2 *Construction of Syllabi/Courses of Studies*

(a) Relevance to the instructional objectives
(b) Appropriateness of the units formulated
(c) Sequence of topics/units
(d) Up-to-dateness (modernity) of the syllabus/course
(e) Suitability of the approach in organization of the courses
(f) Adequacy of the content selected
(g) Nature and scope of the topics delimited

2.3 *Content Selection and Organization*

(a) Approach adopted for the organization of content in each unit
(b) Formulation of unit-wise objectives
(c) Adequacy and relevance of the content selected
(d) Mode of presentation of the content
(e) Teaching-learning aids used
(f) Articulation of sub-units/modules
(g) Readability of the textual material

2.4 *Development of Materials*

(a) Textual materials
(b) Supplementary materials
(c) Teacher materials (manual, guides, etc.)
(d) Auxillary materials (work-sheets, workbooks, etc.)
(e) Test materials
(f) Mode of the development of materials

3.0 Implementation Phase

3.1 *Identifying Major Areas of Change*

(a) Pre-service training modalities
(b) In-service training requirement
(c) Role of inspectorate
(d) Learning milieu of schools
(e) Pattern of the examination system

3.2 *Orientation of Teachers*

(a) Training about activities and background information

(b) Training about programmes' objectives

(c) Training relating to teachers' role and class management

(d) Training about mointoring of students' progress

(e) Training for self-development of teachers

(f) Management aspect of training

3.3 *Trial of Materials*

(a) Effectiveness of the materials used in trial schools

(b) Observation schedules of teaching-learning situations

(c) Feedback mechanism and corrective measures adopted

(d) Revised or modified materials

(e) Records maintained

3.4 *Mass Introduction of New Materials in Schools*

(a) Orientation programme of teachers for mass introduction

(b) Strategy of implementation

(c) Logistic systems adopted

(d) Mode of diffusion and dissemination

(e) Monitoring of the programme

4.0 Quality Control (of implemented programme)

4.1 *Project Appraisal*

(a) Areas of successes and failures

(b) Causes of failures

(c) Materials for diagnosis

(d) Type and relevance of correctives applied

4.2 *Follow-up Studies*

(a) Summative tests used

(b) Effectiveness of the correctives applied

(c) Case studies undertaken

(d) Programme of reorientation of personnel, etc.

4.3 *Adaptation of Curriculum Materials*

(a) Objectives reformulated

(b) Reorganized curriculum materials

(c) Adaptation of new teaching-learning strategies and processes

(d) Modifications made in the system of examination, etc.

Mode of Evaluation

1.0 Reflective Evaluation

1.1 *Data Collection*

(a) Types of the data collected

(b) Relevance of the data sources

(c) Mode of data collection

(d) Timings of data collection

(e) Sufficiency of the data collected

1.2 *Data Processing*

(a) Approach used (experimental/ illuminative)

(b) Relevance of the techniques of recording and analysing data

(c) Mode of summarization

(d) Methodology of reporting

1.3 *Judgement-making*

(a) Purpose of judgement-making

(b) Basis of judging (referent used)

(c) Types of the judgements made

(d) Nature of the decisions taken

2.0 Formative Evaluation

2.1 *Data Collection*

(a) Types of the data collected

(b) Relevance of the data sources

(c) Mode of data collection
(d) Timings of data collection
(e) Sufficiency of the data collected

2.2 *Data Processing*

(a) Approach used (experimental/illuminative)
(b) Relevance of the techniques of recording and analysing data
(c) Mode of summarization
(d) Methodology of reporting

2.3 *Judgement-making*

(a) Purpose of judgement-making
(b) Basis of judging (referent)
(c) Types of the judgements made
(d) Nature of the decisions taken

Frame Factors

In the previous pages we have identified the components of evaluation with respect to the three facets of evaluation, namely, the entity of the aspects to be evaluated, the stages of evaluation, and the mode of evaluation. If interaction among the components of the three facets of evaluation is visualized in a 3-dimensional perspective, it gives the various frame factors for evaluation of the curriculum project.

The three dimensions of the model provide a matrix of evidences of various types. Suppose, we are interested in judging the planning part of a project with respect to each of the five aspects (SIPPI) in terms of the three modes of evaluation (RFS), we would have P (SIPPI) (RFS)=15 types of evidences. Similarly, even one component of planning, say, project objectives can also be evaluated. Thus, we would get (5×4×3) types of evidences in all, relating to the four stages of evaluation (PDIQ) and three modes of evaluation (RFS). Appraisal of the objectives can be done by having answers to questions like the following :

1. Are the objectives related to the national goals (context)?
2. Are the objectives realistic in terms of resources (inputs)?
3. Can the objectives be translated in textual material (process)?
4. Are the objectives stated in terms of intended outcomes (product)?
5. Will the attainment of these objectives lead to the desired programme effects/some collateral effects (Impact)?

Answers to these questions can be found by using a relevant mode of evaluation, i.e. reflective, formative, summative, or a combination of these.

Theses Proposed

On the basis of the analysis made of the different curriculum evaluation components the following theses emerge from the rationale developed above :

1. Evaluation should be treated as the service component of every curriculum development process and, therefore, provision for evaluation at various stages of curriculum development must be made to appraise each key component.
2. Formulation of curriculum objectives is a prerequisite to any systematic development and evaluation of a curriculum project. Such objectives should, however, be treated as hypotheses, subject to modifications and revision, on the basis of empirical evidence, leading finally to emergent objectives against

which summative evaluation may be done.

3. Since every discipline has its own structure, evaluation of curriculum content in a project must be geared to the substantive and also syntactical structure of the subject.
4. The effectiveness of an instructional strategy in a curriculum development programme should be judged in terms of the intended learning outcome but with reference to the inputs and the setting in which the project fructified.
5. Since judgement-making depends on the nature and quality of the data collected, every effort should be made to explore all the data sources and apply the relevant data collecting devices to procure' vaild and reliable evidences about curriculum effectiveness.
6. Since educational relevance is of primary importance as compared to the reliability of measures, the curriculum data may be analysed with reference to the criterion and not in terms of norms. As such, criteria of a successful curriculum must be determined before-hand in order to interpret the data accordingly. Nevertheless, limitation of data and subjectivity in interpretation have to be accepted as inherent weaknesses in curriculum evaluation.
7. A good judgement can be made on the basis of clearly visualized and desired standard of excellence and objectivity of adequate evidence. Since the strategy of evaluation should rest mainly on the people and not in the tools and techniques they use, the evidence that we get is mostly based on the pooled opinion and experience of those who are involved in the process of development. Therefore, the methodology of processing a judgement should mainly envolve from the rationale and illuminative evaluation of achievement of the standards laid for a project. Judgement with respect to comparison of curricula should be restricted to those areas of achievement that involve the same basic assumptions from which common criteria of evaluation can be derived.

A New Outlook on Education

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"THE past is our foundation, the present our material, the future our aim and summit."[1] This one sentence epitomises Sri Aurobindo's views on education. But today unfortunately the stress is sometimes on the past, very often on the present, and seldom on the future.

Sri Aurobindo has always been projected as a futurist, which is crystal clear from some of the statements of The Mother : "Sri Aurobindo does not belong to the past or to history. Sri Aurobindo is the future advancing towards its realisation."[2] And again : "He (Sri Aurobindo) has come to bid the earth to prepare for its luminious future."[3] Further : "Sri Aurbindo has come on earth not to bring a teaching or a creed in comparison with previous creeds or teachings, but to show the way to overpass the past and to open concretely the route towards an imminent and inevitable future."[4]

Very true. When one goes through the writings of Sri Aurobindo, it would be noted that all that he speaks about is of the future, things to come and take shape on this earth of ours. Yet he has been educated in a system which is a legacy of the past, belonging to a few centuries ago ; he has participated in his life time of 78 years in all possible human activities—political, literary, educational, cultural, philosophic, yogic, and spiritual. However, he was never tied down to his times, his gaze was constantly fixed on the future. Thus, Sri Aurobindo combined in himself the past, the present, and the future. He was a living embodiment of the infinity as it were. His life is a pointer to all futurists that a consideration of the future in negligence of the past and the present will not only be incomplete and inperfect but also unattainable without the foundation of the past and the materials of the present.

Education in the Past

The authors do not attempt to provide a definition of education, the concept of which has progressively evolved through the ages and differed from age to age and country to country. These concepts are agreed on certain fundamentals which shall be brought out during the course of the present discussion. Nor is it the intention of the authors to enter into a detailed discussion on the educational system that prevailed in the past but to confine themselves to those elements common to the East and the West which serve as the foundation for the present system and shall continue to be so in the future. Civilization and culture being continuous (the apparent gaps representing the continuity only in suprressed and spiritual forms), "history exerts a powerful influence on education, in the sense that educational development is a function of societies' historical development, that education bears many traces of the past."[5]

The International Commission on Development of Education in its report 'Learning to be' has made a comprehensive study of the educational heritage of the past and points out :[6]

- —From the earliest times man has consciously used his gift for speech to communicate from individual to individual, group to group, and generation to generation.
- —The process of education has evolved as a means of biological and social necessity.
- —In primitive society, education was complex and continual. It aimed at forming the character, aptitudes, skills and moral qualities of an individual who educated himself through a kind of symbolic process, rather than being educated. Life in the family or clan, work or play, rites and ceremonies were all day-to-day opportunities for learning, from motherly care to lessons from hunter father, from observing seasonal changes to watching familiar animals, of listening to tales told by elders and chants of the tribal shamam... These ideals, long obscured by didactic, scholastic pedagogy, are the essential elements in the concept of a consciously learning society.
- —The adoption and development of school structure in education appears essentially to be linked with the systematization and steady increase in the use of written language. This prominence of the written over the spoken word remains deeply embedded in most school systems today.
- —Respect to the written word reached its high point with the Chinese mandarins.
- —The world's first universities were those of the Brahmins in India, where they presented a consumate example of education based on philosophy and religion, while at the same time stressing the study of mathematics, history, astronomy and even the laws of economics.
- —Buddhist education emerged as a reaction against the Brahminical doctrine of caste and their monopoly of education, yet in its turn became equally rigid.
- —Education in ancient Persia involved lifelong training, covering all activities of an individual until old age and included knowledge of the sciences, moral virtues and intellectual disciplines.
- —The ideal of the Graceo-Roman schools was to form harmonious personalities with balanced intelligence, aesthetic and physi-

cal development. Knowledge, intelligence, appreciation of the arts and spiritual virtues were supreme values in an education designed for and confined to the class of aristocrats.

—Ancient Western societies concentrated on the seven liberal arts, viz. grammar, rhetoric, logic, arithmetic, geometry, astronomy, and music.

—In the times when Christianity reigned supreme over a large part of Europe, religion made its authority felt in every sphere of life.

—The Muslim world was among the first to recommend the idea of lifelong education.

—Medieval universities came into existence in the form of large institutions in Europe and in the Americas and spread in Asia and Africa through the Arab and Muslim world which first concentrated on the study of the scholastic philosophy and humanities and later included the natural sciences.

Thus, it can be seen that humanity in the process of its evolution has lost much of the happier educational traditions which were present in the ancient societies and which claim to be the foundation of future education. But it has to be remembered that the earlier traditions cannot be repeated in the same form of the past for the simple reason that the future man is not going to be the same as that of his ancient forefather and hence some ideals, values and principles would no longer hold good for future humanity. But there can be no gainsaying the fact that the ideals of the development of the complete man and the integrated personality and the establishing of a heavenly society which were so much stressed in the Vedic and Platonic education have to be revived in their modified form suitable and conducive to the development of individuals and society of the future.

Current Trends and the Present Crisis

The current trends are a product of the scientific revolution followed by the industrial revolution ushering in the technocratic age and culminating in a cultural crisis. These trends have been well identified by the International Commission on Development of Education. To put them briefly[7] :

For the first time in the history of humanity, development of education on a worldwide scale is tending to precede economic development (as the instrument of social change), education is now engaged in preparing men for a type of society which does not exist.

The other common trends can be briefly stated as follows :

1. A new social group, popularly called the youth, which did not exist previously, has come into being due to the long period of time (normally about ten years now) required for the transition from childhood to adulthood (which was a matter of few months previously).
2. The youth is questioning and revolting against all the traditional values propounded by the older generation, as the behavioural pattern of the latter does not conform to their precepts, and are quite often in opposition. This has led to a huge generation gap between the youth and the adults.
3. Education has been divested of all ideals and has concentrated on preparing students for career success with a view to enabling people to get employment, the opportunities for which are not in proportion to the high population explosion in all countries.

4. Money, efficiency, expediancy and success in life have taken precedence over values like harmonious development or integrated personality and other human values such as honesty, sincerity, truthfulness, cooperation, tolerance, love, etc.
5. There is a growing demand for univerzalisation of education which was formerly confined to the selected aristocratic and elitistic society. The demand for technical and vocational institutions is even more in view of the specialized knowledge and skills required for earning a better and decent living. Family vocations are no longer of much use to a younger generation.
6. The responsibility of education has now shifted from the family, religious institutions, subsidised schools and apprentice guides to public authorities and the State.
7. There is a great change in the psychological profile of the learners in as much as the mordern learner, while he has gained in visual and audiovisual sensitivity, has lost his capacity for concentration, memorisation and is constantly under stress and strain arising out of anxiety and fear.
8. A mass of information is passed on in the name of knowledge and constantly presented through the mass media like the radio, the TV, the newspapers, etc. which have become the third activity of life after work and sleep.
9. Increased leisure is one of the dominant facts of our age. Available and practised pursuits of leisure are more tiresome and exhausting and even injurious than recreating or invigorating.
10. Structures and curricula have become more rigid and systematised, thus restricting the freedom of the individual for a free growth of his potentialities.[8]

There is no need to lengthen the list. But it is to be noted here that the current tendencies are nothing but a reflection of the state of the present humanity which seems to have reached the summit of its mental and intellectual development as manifested in the scientific discoveries and technocratic progress. The faculty of intelligence, once considered to be a boon and a sign of superiority, has proved to be the surest means to lead humanity to its annihilation. The two super powers with their groups of followers now engaged in a cold war in proxy are out to destroy each other under the slighest pretext, while the non-aligned nations find it difficult to keep themselves away from the controversy and the UNO has been reduced to a helpless spectator and adviser. Man has been looking for a new dimension to escape from his present crisis. All eyes are now turned towards the future of the humanity.

The Mother (of Sri Aurobindo Ashram) explains the reasons for this crisis. She points out : "The condition under which men live upon earth are the result of the state of their consciousness. To ask to change the conditions without changing the consciousness is a vein chimera."[9] Explaining the present crisis as an evolutionary one, she says : "There is an ascending evolution in nature which goes from the stone to the plant, from the plant to the animal. from the animal to man. Because man is for the moment the last rung at the summit of the ascending evolution, he considers himself as the final stage in ascension and believes there can be nothing on earth superior to him. In that he is mistaken. In his physical nature he is yet almost wholly an animal, a thinking and speaking animal, but still an animal in his material habits and instincts. Undoubtedly, nature cannot be satisfied with such an imperfect result. She endeavours to bring out a being who will be to man what man is to animal, a being who will remain a man in its exernal form, and yet whose consciousness will be far above the mental and its slavery to ignorance."[10]

Thus, man has to exceed his present mentalised animality and grow into his spiritualised divinity which becomes possible by an organization and progress of the individual and the collectivity as they are interdependent and proceed simultaneously. "The evolutionary nisus must tend not merely to create a new type of mental beings but another order of beings who have raised their whole existence from our present mentalised animality to a greater spiritual level of earth nature", says Sri Aurobindo.[11]

Pointing out the nature of the spiritual individual and the spiritualised society, he writes : "A spiritualised society would live like its spiritual individuals, not in the ego but in the spirit, not as the collective ego, but as the collective soul...

"What the spiritual man seeks by the loss of the ego is the Self which is one in all and perfect and complete in each and by living in that to grow into the image of its perfection...

"A society which was even initially spiritualised, would make the revealing and finding of the devine self in man the whole first aim of all its activities, its education, its knowledge, its science, its ethics, its arts, its economics, and its political structure."[12]

In short, the aim of the future man and the future society would be to get completely out of the individual and social ego-centricism and live in the Self in one and all, to live for God in oneself and for the Divine in the universe.

Education of the Futur e

Education of the future would necessitate a new outlook on education, its concept, its aim, methods, curriculum, evaluation, structure, and other aspects.

The concept of education shall follow closely its etymological meaning which is to bring out the best and the highest innate possibilities in the individual and help in the manifestation of perfection already present in him as a nucleus. "It must be an education that for the individual makes its one central object the growth of the soul and its powers and possibilities, for the nation will keep first in view the preservation, strengthening and enrichment of the nation-soul and its dharma and raise both into powers of the life and ascending mind and soul of humanity."[13]

The aim of future education shall be to realize perfection—perfection of the individual and perfection of the collectivity through a process of development of consciousnees. The Mother points out : "When we reach this degree of perfection which is our goal we shall perceive that the truth we seek is made of four major aspects : Love, Knowledge, Power and Beauty. These four attributes of the Truth will spontaneously express themselves in our being. The psychic will be the vehicle of true and pure love, the mind that of infallible knowledge, the vital will manifest an invincible power and strength and the body will be the expression of a perfect beauty and perfect harmony."[14]

It should be clear then that the present clamour for career success and efficiency for amassing wealth has to changed into an intense aspiration for realizing perfection which is four-dimensional, consisting of the physical, vital (emotional), mental and psychic (including artistic) and spiritual and becoming an integrated personality through a process of contact with the spirit and the growth and the manifestation of the Truth of the being as far as the individual is concerned. Similarly, the tendency of competition and conflict prevailing in the present society has to be replaced by the spirit of cooperation and human unity through a process of spiritualisation of the society, the essential elements of which have been indicated before.

The International Commission considers the ideals of the physical, intellectual, emotinal, and ethical integration of the individual into a complete man as a broad definition of the fundamental aim of education[15] and recommends the societies 'to help man fulfil himself in every possible way—as agent of development and change, prompter of democracy, citizen of the world, author of his own fulfilment and to help him find his path through reality towards the ideal of the complete man' and it sees these aims reflected in 'scientific humanism, in the development of reason, in creativity, in the search for balance among the various intellectual, ethical, emotional and physical components of personality and in a positive perception of mankind's historic fate."[16]

There seems to be no essential contradiction between the aim of perfection and the aim proposed by the International Commission if the ideal of the complete man can well mean an integrated personality and the aim of education as enunciated by the Commission can well serve as a practical means to realize integral perfection.

A new psychology is needed for the education of the future. The present concept of the human mind being one and indivisible and as an extension of the animal mind has to be replaced by a deeper perception of its five aspects—physical, vital, mental, psychic and spiritual, Sri Aurobindo points out : "The mind proper is divided into three parts—thinking Mind, dynamic Mind, externalising Mind—the former concerned with ideas and knowledge in their own right, the second with putting out of mental forces and realization of the idea, the third with the expression of them in life."[17]

He explains elsewhere : At the outset man lives in his physical mind* which perecives the actual, the physical, the objective and accepts it as fact and this fact as self-evident truth beyond question ; whatever is not actual, not physical, not objective, it regards as unreal or unrealised,—Physical science is a vast extension of this mentality."[18] In short the physical mind deals with the physical senses and bodily conduct.

Explaining the functions of the vital mind, Sri Aurobindo points out : "Vital Mind proper is a sort of a mediator between vital emotion, desire, impulsion, etc. and the mental proper. It expresses the desires, feelings, emotions, passions, ambitions, possessive tendencies of the vital and throws them into mental forms."[19] In other words, the vital mind deals with emotions and reactions to vital forces.

The thinking (or mental) mind deals with ideas, concepts and mental images which enter into the adhar from the environmental consciousness. It is concerned with logical reasoning and exercises a critical control.

Once a clarity is developed about the complex functioning of these three aspects of mind one can be ready to understand and use the other two higher aspects of mind, the psychic and the spiritual.

Curriculum

An aim as high and wide, generous and disinterested, as self-perfection through self-discovery cannot be expected to be achieved through a cut-and-dry rigid curriculum confined to a few subjects and limited to a few textbooks. All the knowledge, skills, interests, appreciation and values are to be acquired from the open book of life and interactions with the entire social milieu. All the experiences beginnig before birth and not ending with death (according to the belief in rebirth) should contribute towards perfecting the personality.

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* Also spoken of as body-mind or externalising mind. Also known as life-mind or dynamic mind.

This implies that education has to be closely linked up with concrete goals. Rigid distinctions between different types of teaching—general, scientific, technical and professional—must be dropped and education as from primary and secondary levels must become theoretical, technological, practical and manual at the same time.[20]

Another task of education would be to preserve each individual's originality and creative ingenuity and enable him to share in the joys and sufferings of the common humanity.[21]

Method

What could be the method of an education aimed at self-perfection ? It is necessarily self-education—the learner learning for himself and progressing freely according to his own ability with a freedom to decide for himself what he wants to learn, and how and where he wants to learn it.[22] It has to be remembered that every learner is a remarkably concrete being with a history and cultural heritage of his own and cannot be confused with others.[23] Hence, every individual learner is to be treated as a soul with a destiny of his own and offered the required opportunities independent of others for his self-fulfilment.

The teacher is only another child, but a senior child with varied experience which can be shared with the learner. He is a friend and a guide ready to help the learner as and when necessary but without much interference or imposition from outside. He believes that nothing can be taught, for knowledge is already imbedded in every individual and it has only to be unfolded; that the child has to be consulted in his growth and things are received only in a state of readiness; and that it is best to proceed from the known to the unknown and from near to far and that a learner does not accept things very much removed from his own culture.

Evaluation in future education becomes a means of continuous self-assessment by the learner to measure his own progress, to identify his strengths and weaknesses in the path of perfection and it takes the form of tests—oral and written, theoretical and practical, subjective and objective, interviews, case records and inventories and the development of all the aspects of personality, including psychic and spiritual, are included in the process.

The educational structure confined to classes, patterns, stages and buildings would have been a thing of the past. It should be as flexible as the methods and content befitting the aim of self-perfection. The ideas of open universities, life-long education and multi-point entry would have been quite common.

An education conceived and conducted on the ideal of self-perfection and development of consciousness would have prepared the individual and the collectivity for the next stage of human evolution—the divine man and divine life upon earth, which becomes possible through a process of psychic and spiritual education.

Psychic and Spiritual Education

The psychic is the divine spark, commonly known as the soul or *jīvatman* or *antaratman* as the Upanishads call it, the divinity present in man. "Out of this spark," says the Mother, "will slowly emerge an independent conscious being which will have its own being and its own will.[25] She further clarifies : "The psychic is like an electric wire that contacts the generator with the lamp; the lamp being the body, the visible form......It is because of the psychic presence that there can be a direct contact between the Matter and the Divine."[26] Thus, the psychic is the golden link between the Matter and the Spirit.

"With psychic education", says the Mother, "we come to the problem of true motive of existence, the puropse of life on earth, the discovery to which this life must lead and the result of that discovery : the conservation of the individual to his eternal principle."[27] In other words, the different steps and stages of psychic education would be :

(i) To discover this divine presence in oneself ;

(ii) To bring all the other beings—the physical, the vital and the mental—under its guiding light and control; and

(iii) To hand over the leadership of the life's journey to a torch-bearer or to the captain of a ship.

Once this is done, the journey becomes smooth and safe.

Spiritual education, though often confused with psychic education, is of a different character with a different purpose. Bringing out this subtle difference, the Mother explains: "So one can say that the psychic life is immortal life, endless time, limitless space, ever-progressive change, unbroken continuity in the universe of forms. The spiritual consciousness, on the other hand, means to live the infinite and the eternal, to be projected beyond all creation, beyond time and space. To become conscious of your psychic being and to live a psychic life, you must abolish all egoism; but to live a spiritual life, you must no longer have an ego."[28]

Thus, psychic and spiritual education implies identification with the Supreme Divine consciousness and manifestation of this consciousnes in the material world. Hence education of the future necessitates a new outlook on education and entering into a new dimension, the fourth dimension of the human personality beyond the three—the physical, vital and mental, it is the dimension of the psychic and spiritual. It is not the last and final of the educational ladder, rather the first and the beginning in a way. Once education begins with the awakening of the psychic, the individual becomes conscious of the true purpose of his life and of the society or nation in which he lives, and the whole of education takes a different turn altogether. Life becomes meaningful and worth living.

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Renovating School Libraries

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A school library is the first and foremost opportunity for an individual to get self-education, recreation, and entertainment. Reading habits are initiated from the school life and continue forever. Teaching and instructional programmes in a school are incomplete with the provision of a library, as the school library helps to develop reading habits and arouse curiosity for learning among our school children. The books which a child reads during his early life leaves an everlasting impact on his personality and determine his aims for choosing a career in future according to his taste. A school library prepares a child to make a better use of reading material in college, university, public and special libraries at a later stage. Once a child becomes a reading addict and develops a curiosity to read and know about various things, this habit continues throughout his life. So a school library has an important role to play in the educational development of a child and hence in fulfiling the educational aims and objectives of the school.

School Libraries in India

The school library system in India is not very well developed. Various surveys and reports indicate a very poor plight of school libraries in India. More than 50 per cent of our schools do not have libraries at all. The remaining have got some collection of books dumped in closed almihars which are rarely opened for use. The closed book shelves are placed in some inadequate, insufficient, and unattractive room. Some teacher is assigned the charge of one library material and is paid some honorarium. He opens the library when he is free and has neither love for books nor any knowledge of library techniques. The books are usually old, outdated, and unsuitable, and are selected without reference to the students' interests and tastes. Only few newspapers are subscribed to by the school which generally remain in the Headmaster's room. Reference books are rarely seen in the school library collection. The library furniture is not according to the needs of the children. The books are arranged according to the stock list and checked when the charge is handed over to some other teacher. The library is closed with the closing of the school and the pupils are seldom encouraged to make use of the library.

According to the report on higher secondary school buildings in India published by the National Building Organization, 37.3 per cent of schools do not have even a room for library, and in other schools where it is provided, it is used more as a store-room than a library.

What we actually find in our schools today is that school library is the least used facility and the accommodation is a multipurpose room used as an office, NCC room, NSS room, store room, peon's night dwelling place and the best place for the teachers to take their lunch during lunch hours. The books are termite's diet rather than feeding their thought contents to our young children. So, a dirty, ill-selected, badly administered, and least used collection of books is the condition in our school libraries and little effort is being made to make school libraries functional and to improve their services.

However, some modern schools in cities have got well-equipped and well-organized libraries even with a collection of more than 10,000 books. They are equipped with audio-visual media and the students are required to attend a library period to get instructions regarding the use of library and its resources. The librarians are trained and deliver lectures on general knowledge and current affairs.

Reasons for Under-development

1. Teachers, headmasters, and even educational administrators do not realize how unsatisfactory is the condition of school libraries and, therefore, they have no sense of urgency in the matter.
2. Our education system is dominated by examinations and the examination fear compels the students to concentrate on their syllabus and some guides and help books, so the other type of related material remains unused.
3. Most of the libraries lack trained staff, and teachers remain overburdened with their teaching work. So there is no one to initiate the students into the dreamland of literature.
4. Both the teachers and the taught are devoid of any educative and imaginative process of learning. The education system is very much out-dated. What is being taught today in India is the same what was followed in the West in the nineteenth century. A learner's imagination evaporates with a fear in his mind when he is sitting before a person with a whip in his hands and words in the mouth. So, the inventive faculty that exists in the minds of our children is stunted at the beginning and the young student is very much griped with the textbooks covering the examination syllabus or important questions only.
5. If we examine the syllabi of different higher secondary boards, we find that these are very much overburdened and

our young children are supposed to master at least eight major subjects and a high degree of proficiency is expected from them. Such an overburdened syllabus does not allow the children to read away from their courses of study. So, they are not able to read books, according to their interest, for their mental development.

6. Our library science departments do not provide specialized training courses in school librarianship, with the result that we lack in manpower most proficient in school library techniques to manage such libraries.

7. We do not have sufficient literature in our various languages to match the interests of our young children. Though we can boast of having sufficient literature on poetry, fiction, religious thought in all the regional languages but this is too difficult to suit the younger generation.

8. There is no proper co-operation and co-ordination among the various school libraries for the overall development of the school library system.

Suggestions

1. School library should have a separate attractive building with attractive furniture, beautiful well-illustrated books and sufficient audio-visual material to lure the children and to motivate them for reading.
2. School library be planned and organized scientifically according to the needs and situations of the teaching and learning process.
3. Open cess system should be introduced as an experiment in various schools.
4. The courses of study should include provision of library period and the courses should be such that the children may themselves be able to choose the subjects of their interests.
5. Trained librarians with good salary should be attracted to school libraries for the improvement of their services.
6. Some student librarian should also be appointed for library work, besides the trained staff. The student librarian should be given some honorarium and he should work in the library for at least one hour a day. This will also develop in him the habit of earning while learning, besides knowing the library work, developing the reading habit, and making himself familiar with the literature.
7. Libraries in schools should be opened one hour before and after the regular school timings and provision should also be made for its opening on Sundays and other holidays.
8. The vocabulary, style, subject matter, and get-up of children books should be such as will attract the children to use them. They must, in all respects, suit the mental and intellectual development of children.
9. The new books purchased for the library should be well circulated among the children as they always prefer to read new books.
10. School children should be given some assignment work which should be prepared by the students with the help of books in the library. The teachers should guide them in this respect.
11. Children should be taken to various book exhibitions and important book fairs and they should be allowed to freely select the books of their choice.

12. During the school debates children should be asked to speak on the books read by them. It will benefit the children audience and will create an interest in them for reading these books and make them library-conscious or library-minded.

13. Students should be asked to maintain a library diary to note down the books they read during their library hour. They should also write in the library diary the phrases and proverbs read by them in these books. Teachers should examine the library diary from time to time to clarify doubts, if any, of students.

14. Children books and other documents of the school level should be reasonably priced. If these books are expensive, children will not be able to buy them even though they may have the desire to read them. The Children Book Trust should undertake the responsibility of producing a sufficient number of low-priced and good books. Reading such books at home will motivate the children to make more and more use of the school library.

15. A survey of school libraries should be conducted and a development plan for their future development should be drafted. Ways and means for their proper co-ordination and co-operation should also be suggested so that a proper school library system in the country could be established.

16. Proper co-operation between school and public libraries should also be facilitated. Particularly in rural areas there should be a combined school-cum-public library development programme. The grants to be given for a public library in a village should be given to the school library for the betterment of its library services and the school library services should be thrown open to the general public also.

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Book Reviews

Philosophical and Sociological Foundations of Education

S.P. Chaube and Akhilesh Chaube, Vinod Pustak Mandir, Agra, 1981, pp 370, Price : Rs. 20.00.

THE nature of education is multi-disciplinary; the study of this discipline derives its subject-matter mainly from the empirical sciences of psychology and sociology as well as from philosophy. Most of the problems, which seemingly defy solution, belong to philosophy and sociology.

Philosophy as a foundation of education seems to interact with education in three main ways. First, many of the recurring problems of education are actually philosophical problems and belong to well-defined areas of philosophy. Second, education involves the use of 'propositions' and 'concepts' which are highly abstract and ambiguous and it becomes essential that, in order to understand their real import in education, such propositions and concepts should be scrutinized in a philosophical framework. Third, many educational movements are initiated from an adherence to particular philosophical assumptions and beliefs.

Similarly, many key concepts used in education have very deep roots into the soil of sociology. Understanding of these concepts demands from us some knowledge of the nature of those sociological theories in terms of which the concepts are used in education.

Therefore, philosophy and sociology both provide strong foundations to education and this justifies inclusion of the study of these educational foundations in B.Ed., M.Ed., M.A. (Edu) M.Phil. (Edu) courses of various universities.

Students pursuing these courses find some difficulty in making an access to original works of great authorities in the fields of philosophy and sociology of education. To initiate them into the original works of these great masters, they require books which can serve as a bridge to carry them from class-lectures over to the world of words of these academic giants where they can feel and experience the proximity with the original ideas of philosophers and sociologists. These types of books (and one such book is under review), which give them a comprehensive grounding and which can serve as such a bridge, are, indeed, in paucity. With this fact in view, perhaps, the authors have written the present book under review.

The book under review has two parts : Part I, Philosophical Foundations of Education, contains twenty chapters; and Part II, Sociological Foundations of Education, contains eleven chapters.

In Part I, the material is loosely organized and there is no thread of coherence running through various topics and sub-topics. The authors have unsuccessfully laboured hard to define general philosophy, its scope, nature of Western and Indian philosophies, etc. Instead, the authors could have explained the inter-relationship of philosophy and education and the nature and scope of educational philosophy by bringing out their areas into prominence where the two become inseparable.

While discussing 'isms' in education, the authors have not used logical framework. It has resulted in disjointed theoretical discussion. This is certainly not the case with Part II, but in Part I it does not go unnoticed by an average reader.

Some discussions in this part clearly belong to the domain of pure philosophy. The space used in these discussions could have been profitably utilized in explaining the topics of educational philosophy in greater detail. Part II (Sociological Foundations of Education) is free from these flaws. Here, topics and sub-topics are well-organized and more meaningfully arranged. Had it been done in Part I also, the authors would have got more space for explaining 'isms' in detail, especially 'isms' of later origin. Students generally fail to get any reliable matter on these 'isms' which are difficult to be understood by them as these 'isms' are western in nature and origin.

The language of the book, specially in Part I, requires careful editing. The very opening sentence has a grammatical mistake (p. 3). Howlers of this type are scattered all over this part. For example, '*the* love' (p. 3, 1.10), '*a* knowledge' (p. 73, 1.29), 'progressiveness' (p. 85), 'These people...way' (p. 138). There are other instances where bad English is used; for example, 'We are coming to this below :' (p. 263). There are mistakes of syntax in almost every chapter. In a text-book written for post-graduate students (for students of any stage for that matter), such howlers are inexcusable. In the same way, the questions set in the exercises are also not well-worded. To save space, only one example is given here : Question No. 1 on page 76. Nevertheless, Part II dealing with Sociological Foundations is free from these shortcomings of language.

It seems that for one reason or the other, the Senior Author, who is a well-known teacher-educator of Uttar Pradesh, could not give his careful attention to Part I of the book under review.

It is, therefore, suggested that the language of the book should be edited thoroughly before taking out its second edition.

If these shortcomings are taken care of, the book can prove to be a very good text-book for students doing M.Ed., M.A. (Edu.), and M.Phil. (Edu.) courses.

The publishers rightfully deserve appreciation for bringing out this book. The format, the get-up, and the printing of the book are very good. The publishers are congratulated in bringing out a book of 370 pages at such a low price.

K.R.P. SINGH

Concise Science Dictionary

Alan Isaacs, John Daintith and Elizabeth Martin (Editors), Oxford Science Publications, Oxford University Press, Oxford, 1984, pp. 762, Price : Rs. 190.00.

IN this ultra-modern age, knowledge is expanding at such a tremendous speed as has never been witnessed earlier. New parameters are constantly making their inroads, quite now and then, into the breadth and depth of understanding in almost every sphere of life, and, for that matter, in every branch of knowledge. It is, therefore, commonly believed that, in this jet era, theories and innovations cherished only a decade ago find it rather hard to survive in the face of an exceedingly fast-moving change process, making it, in turn, very difficult for most people to keep pace with knowledge explosion. This is particularly so in the field of science and technology where the extension has been extra-ordinary over the years.

However, one easy way to approach the limits of new knowledge is through the medium of glossaries of technical terms and special dictionaries in the relevant areas. Evidently, glossaries have appeared in different disciplines to make their understanding easy for the layman. But insofar as special subject dictionaries are concerned the lead taken by OUP is remarkable. They have to their credit a number of works including those specifically meant for students of related subjects such as music, law, medicine, computing, etc. The book under review, *Concise Science Dictionary*, is obviously the outcome of a similar effort to make the learning of science and its allied branches handy. It seems, indeed, to be the philosophy of OUP to enrich learning in every field with a set of dictionaries and compendiums from time to time.

The Dictionary under review naturally stands on its own merits. It is not simply concise, as its name indicates, but also quite comprehensive insofar as its coverage is concerned. It deals with almost the entire gamut of science considered essential for senior school and early college students. In other words, it explains words, technical terms and concepts drawn from all aspects of science, the knowledge of which is indeed a must for the contemporary man. This concise dictionary would do well in serving as a cogent instructional material for learning science in variety of its dimensions. Wherever possible, the meanings have been made quite easy and comprehensible with the help of lucid sketches, diagrams, charts, pictures, etc. For instance, the entire body of Amino Acids is well described through a comprehensive chart indicating the names of acids, their abbreviated forms and formulas that go to make them. So is the composition of mammilian blood explained through approriate diagrams and the nature and kinds of different telescopes evolved thus far through apt sketches. This Dictionary is adequately illustrated matching its concise nature and purpose. Its seven table-appendices giving basic information about the standard international units, the solar system, the biological time scale, the plant and animal kingdom, and the periodical table supply additional basic information in science. The strength of this book also lies in explaining the latest concepts and equipments developed in science in the recent past. Terms like Boson, for example, a recent invention in science, and CAT Scanner for that matter, among others, find their due mention in this book. Similarly, varions types of tests such as Benedicts Test, Molische's Test, etc. and abbreviations (like PVC, BHC, TNT, ATP, CNS, etc.) of scientific facts, terms and nomenclature find place in this volume to enrich the students' vocabulary.

Yet, certain obvious gaps and lapses are visible in this book. In order to make it more handy for students, who quite often need knowledge and information in the form of a ready reckoner, things like abbreviations in science could have been given separately at the end of the dictionary lest most common abbreviations like DDT should be missed as in the case of the present volume. Another kind of gap is the absence of names like Arya Bhatt, Bhaskra, Soyuz, etc. which are as important for a science student as are other items of knowledge and information in science. Anyway, the book under review is an excellent attempt in compiling the world of science into a concise dictionary. Its possession is obviously very useful for school and college libraries, and equally so for science students and teachers alike.

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